APRIL 1972

WEEDS TREES and TURF

DUTCH ELM DISEASE
ACCUTROL SPRAY SYSTEM
YEAR-ROUND FERTILITY
ZOYSIA GRASS

IMPORTANT RENEWAL NOTICE
SEE PAGE 21

Through professional planning

Superintendents decide what a course needs to be healthy, look better and play better

like using ACTI-DIONE® in a Tees Greens Fairways program

Fungus diseases can bring disaster to a golf course. That's why professional superintendents decide every year to follow a complete disease control program.

Besides the direct damage caused by fungi, unchecked disease can ruin the investment made in fertilizer, weed control, water and management practices (verticutting, aerifying, mowing and the labor they require). This investment can range up to $80,000 a year and deserves the protection of a complete disease control program.

DISEASE CONTROL PROGRAMS PAY
Many superintendents have discovered Tees Greens Fairways programs of disease control pay their own way. They help eliminate the problems and costs which arise when turf is lost. They help eliminate golfer dissatisfaction. The increased play from growing numbers of golfers is too much of a challenge for anything less than healthy turf.

FOLLOW APPLICATION SCHEDULE
Although the level of control on fairways is not so critical as that required on greens, prevention of disease is always less expensive than cure. Start your fairway spray program in the spring as soon as possible after the first mowing. Continue on a scheduled basis—usually an interval of 21 to 30 days. Acti-dione turf fungicides can eradicate many turf diseases, but you will save time, money and many headaches by establishing a program of prevention.

TRAINED TUCO PERSONNEL
Just a call will bring one of our highly trained and expert field representatives to help you in your program of scientific turf management. He can help with more than just fungus diseases, too.

ACTI-DIONE ADVANTAGES
It's biodegradable and non-mercurial. It does not harm beneficial bacteria that are necessary for the breakdown of thatch and release of nitrogen and other nutrients. It is absorbed into plant cells through locally systemic action. It is water dispersible for uniform coverage when sprayed on the grass.

DISEASES CONTROLLED
Leafspot, Dollarspot, Melting-out, Fading-out, Going-out, Brown patch, Pink patch, Powdery mildew, Rust

Acti-dione TGF®

New formulation from TUCO. Easy-to-open 15-ounce zip-top package. Easy to use. Easy to handle. Easy to dispose of. Treats three average greens. For fairway use, check with your supplier.

Acti-dione® Thiram

Broad-spectrum, year-round disease control, including snow mold. Your supplier has complete information.

TUCO Division of The Upjohn Company, Kalamazoo, Michigan 49001

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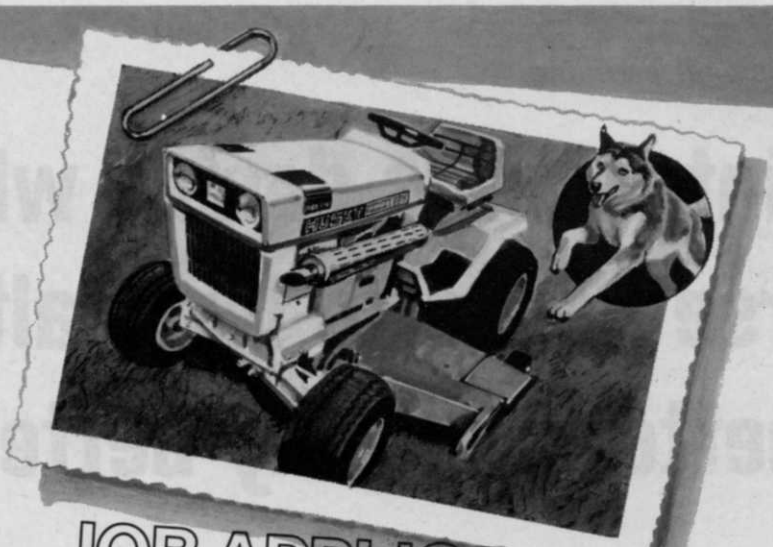

JOB APPLICATION

NAME: Bolens Husky 18 hp. tractor

JOB DESIRED: One-tractor maintenance crew

EXPERIENCE: Mowing, snow removal, grading, terracing, tilling, weed cutting, cultivating, loading, sweeping, raking, plowing, seeding, fertilizing, hauling, aerating, scarifying, spraying, fogging, trenching, thatching, shredding, and post-hole digging.

SPECIAL ABILITIES: Hitches up to 35 separate attachments. Has an exclusive collar-locking PTO system, a hydrostatic foot pedal transmission (the no-hand shift), a two spool hydraulic system, an extra capacity fuel tank, and (optional) three point hitch and power steering.

SALARY: Very reasonable.

INTERESTED?

(Then send this coupon. We'll be in touch)

Bolens Div., FMC Corp., Port Washington, Wisconsin 53074
Gentlemen: Let's talk!

NAME _____ TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

BOLENS

Bolens, Husky, and Bolens Husky are Registered Trademarks of Bolens Div., FMC Corp., Port Washington, Wisconsin

Introducing KROVAR I

a new one-two punch for tough weed problems

KROVAR I is really two great herbicides in one—bromacil and diuron. Each chemical has certain advantages over the other, and together they produce a single product with many superior advantages . . .

Controls more weeds and grasses.

KROVAR I controls a wider spectrum of weeds and grasses than HYVAR® X or KARMEX.® It even gets tough ones like water grass, groundsel and filaree. Applied at higher than normal rates, it actually suppresses the tougher perennials, such as bermuda grass, salt grass and yellow nut grass.

Gives you an edge on the weather.

In high-rainfall areas, KROVAR I doesn't dissipate as rapidly. In low-rainfall areas, it takes only a little moisture to start KROVAR I working against weeds. Result? Better control in a wide range of rainfall.

The interval between application and rainfall is less critical than with other residual herbicides. KROVAR I effectively reduces weather as a factor in weed control.

Economical.

KROVAR I gives such effective, long-lasting control that it substantially reduces the need for follow-up sprays later in the season. In many areas, one application takes care of weeds and grasses all season long. Additionally, KROVAR I used in retreatment extends the desired controls and reduces the need for "touch-up."

Large safety factor.

When used as directed, KROVAR I is safer to trees, shrubs and other desirable vegetation than "straight" HYVAR products. It's non-volatile, non-flammable, non-drifting.
Pick up a supply of KROVAR I soon and specify it in your orders for custom application.

With any chemical, follow labeling instructions and warnings carefully.

DU PONT REG. U. S. PAT. OFF. **KROVAR® I** WEED KILLER

For More Details Circle (144) on Reply Card

WEEDS TREES and TURF®

Volume 11, No. 4 **April, 1972**

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Dutch Elm Disease—One Step Closer To A Cure 13

An up-to-the-minute report on control of this vascular wilt disease that has plagued elm trees for more than 40 years. Highlighted is work completed by the Shade Tree and Ornamental Plants Laboratory, Delaware, Ohio, and the Elm Research Institute.

Accutrol—Industry Unites Chemicals and Air 18

New application methods for modern chemicals are generating excitement throughout the Green Industry. Accutrol, a spray system developed by Velsicol, Chemical Corporation, combines chemicals and air to form an air emulsion spray that minimizes drift, reduces the number of times required for refilling spray tanks and increases the efficiency of the chemical being sprayed.

Expo—Commercial Turfgrass 23

A report of the 43rd International Turfgrass Conference and Show of the Golf Course Superintendents Association of America.

Winter Hardy Ornamentals 26

The key to Year-Round Fertility is a nitrogen source that acts throughout the year. Dr. Robert J. Schramm, Jr. of the University of Connecticut reports on his studies with Uramite ureaform fertilizers.

Zoysia Grass 28

A different way in establishing a golf course. Mel Anderson's success with zoysia grass represents an interesting concept in turfgrass culture. His chemical program involving both Dacthal W-75 and Daconil 2787 have kept weeds and disease to a minimum.

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The Cover

Looking like the progeny of a cross between a hay baler and a refuse truck, this rock picker can minimize manual labor chores considerably. Here, Jack Parkhurst of Smith Tree & Landscape Service, Inc., Lansing, Mich. shows the ease with which this Armor Anderson Rock Picker effortlessly handles the big ones. The cost of manual labor on a single job can go a long way in paying the depreciation on a machine such as this.

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try to say
TREES
without smiling
Saying "Trees" will bring a smile to your face. Seeing them. Climbing in them (if you're a kid). Using them or just enjoying them, trees bring a lasting satisfaction. On this 100th anniversary of Arbor Day ...the Conservationist's Holiday, bring joy to your little corner of the world. Plant a tree for tomorrow.
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Plant a tree for tomorrow!
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All Yours

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U.S. Plant Patent 2887

The ultimate in beautiful lawn turf when you insist on Fylking, the low-growing, ground-hugging, fine-textured grass. It produces an abundance of side shoots, and has a dense root system that strangles weeds and creates rich, green cushiony turf of unrivalled loveliness. More disease and drought resistant, Fylking has proven superior in years of international tests and actual use. It thrives cut at ¾ inch (even low as ½ inch) making backyard putting greens practical. Ask for 0217® Brand Fylking Kentucky bluegrass lawn seed or sod at your local wholesale seed or sod distributor.

Another fine product of Jacklin Seed Co., Inc.

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Editorial

Our Brave New World

At the Southern Weed Science Society in January we heard Dr. Joseph R. Orsenigo speak on weed science in the future. As he talked we could not help but let our imagination run at the same accelerating rate with which Dr. Orsenigo credited the growth of weed science. We could see the man with the hoe of the past contrasted with a giant electronic system of gadgetry commanded by a professional zapping weed seeds hidden from view but visable through micro-cosmic radiation.

While we dreamed Dr. Orsenigo talked in reality about the applicability of UHF electromagnetic fields and laser methods, the improvement of mobile power sources and other technologies based on electricity. He mentioned that "weed science has an important role in anticipating and implementing production methods that will result from genetic modification of crops, new cultural systems and the introduction of new crops."

The realism of our dream and this plant physiologist's remarks are upon us already. Consider the new mini-granules measured in microns, equipment that can be programmed to perform a myriad of tasks, chemicals that can be applied as a foliar spray to control nematodes in the soil, the ability to detect disease or insect infestations through the wonders of infra-red photography from an orbiting satellite and a host of others.

At least one chemical company has now formed a group of scientists who are looking at new methods of application of crop protection chemicals. Impregnated bars drug over the ground or capsules containing time-release herbicides planted in the ground once in five years are potential candidates of future application techniques.

Closely tied to this scientific research will be an intensified awareness of the ecological and biological balance of nature.

We believe that the Green Industry has a definite stake in the future of weed science. Yet this interest must be nurtured and developed. Participating in society meetings and expressions of ideas and opinions to government leaders, researchers and industry must be increased in order to draw more attention to our dynamic business.

Progress is measured by achievement. As communicators of the services offered, we must increase the knowledge of those who use these services. More consumer oriented advertising other than a telephone yellow page listing is needed to tell the Green Industry's story. Direct mail, radio, television and word of mouth must play a bigger role. By teaching others what we have learned, a greater appreciation of the goals of this growing industry can be achieved.

This new, Super-Lightweight will amaze you! The STIHL 020 AV

Here it is! New and terrific!

The finest and the most advanced mini-size lightweight saw in the World . . . designed and engineered for you by STIHL, makers of the World's First and Finest Chain Saws.

It's the first and only chain saw of its size in the World with built-in shock absorbers and automatic chain oiling. Yes, now you can have the same famous patented STIHL AV anti-vibration system & superior quality and performance, formerly only available in our higher priced professional models.

A small beauty, that weighs less than 10 lbs. with bar & chain. Its amazing power and long, trouble-free operation, without overheating, makes it perfect for pruning, limbing and felling.

So . . . Don't Settle for Less than the Best. Insist on STIHL! Like the terrific new STIHL 020 AV!

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STIHL 020 AV

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Government News / Business

Phaseout of the no-residue, zero tolerance concept of certain pesticides continues by the Environmental Protection Agency. The latest herbicide to receive the ax is IPC for use in weed control for grasses grown for seed. Products containing IPC for this use are cancelled April 9. EPA has further cancelled and suspended all registrations for use of sodium cyanide, 1080 and strychnine for predator control. Structural or urban pest control with these compounds is not affected. Thallium sulfate as an economic poison has been cancelled or suspended. Shipment and sale of thallium as a rodenticide will halt.

Benlate benomyl fungicide became official in early March as an aid in the control of Dutch Elm Disease. The Environmental Protection Agency granted Federal registration for use of Benlate as a foliar spray and trunk injection. The product, manufactured by the Du Pont Company, is considered by many as an important step forward in DED control. EPA has a kicker on the label, however. Benlate must be used by trained arborists. At press time, only one state, Wisconsin, has scheduled training. Consult with your state Land Grant university for more details.

Aquatic plants may hold the answer to reducing mercury levels in contaminated lake sediments. Research conducted by Dennis R. Keeney, soil scientist at the University of Wisconsin has shown that inorganic mercury can be changed to organic forms by micro-organisms in sediments. Organic mercury has been found to be quite mobile in sediments and readily available for plant uptake. This means that rooted aquatic plants theoretically could remove quantities of mercury. At an appropriate time these plants could be harvested, thus reducing dangerous levels of mercury contamination. Only laboratory tests have been made at this time, but Keeney believes it offers potential for scientists to investigate.

Nearly 200 suggested amendments to the proposed Federal Environmental Pesticide Control Bill of 1971 swamped a subcommittee of the Senate Committee on Agriculture during two days of hearings last month. One suggested amendment incorporated in the Committee's work draft would allow use of restricted pesticides under supervision of a certified applicator who does not have to be physically present at the time and place a material is applied. However, David D. Dominick, assistant administrator for categorical programs at EPA poured cold water on this measure by saying,"I recommend against language that would preclude the Administrator (of EPA) from requiring that a certified applicator has to be physically present at the time and place that a restricted pesticide is applied."

Environmentalists are lobbying to toughen a water pollution bill being drafted by the House Public Works Committee. Some environmentalists believe the measure is weaker than one passed by the Senate which would prohibit industrial discharges into waters by 1985.

When a company puts its name on a product...

you know it will give good service and stand behind the results.

What better reason to buy Nitroform® nitrogen in your supplier's own bag? You get a smart organic nitrogen buy plus the service that comes when a supplier sells his own product.

In the Hercules bag or in your supplier's bag, Nitroform is the same high-quality product. Produced under stringent manufacturing conditions, Nitroform guarantees 38% organic nitrogen and assures predictable performance. It's long-lasting, non-leaching, non-dusting and odorless.

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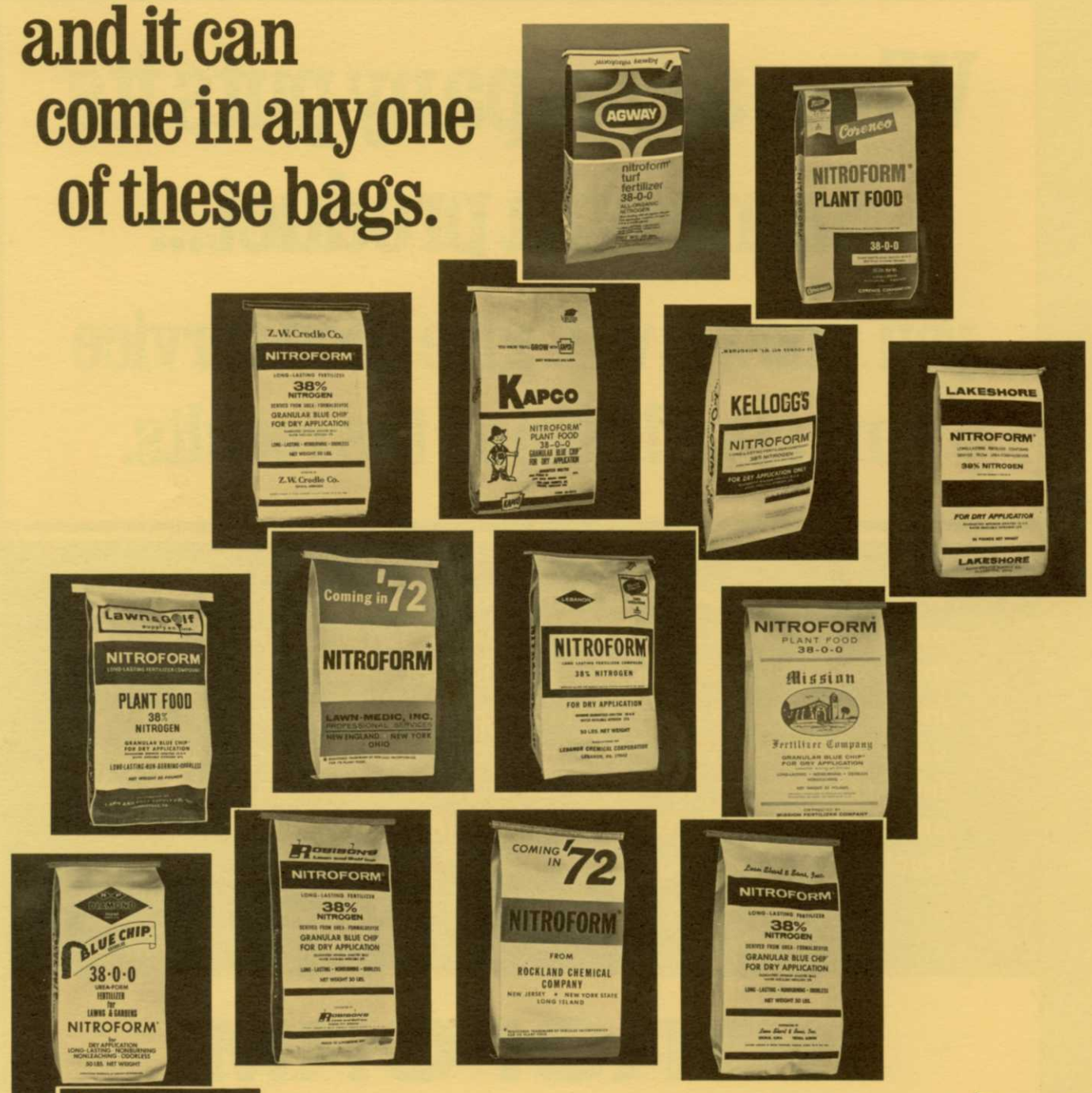

TRY

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ORGANIC NITROGEN FOR SPRAY APPLICATION.

TURF AND HORTICULTURAL PRODUCTS
SYNTHETICS DEPARTMENT, HERCULES INCORPORATED
WILMINGTON, DELAWARE 19899

STH72-6

Dead Elms In Michigan.

DUTCH ELM DISEASE

One Step Closer To A Cure

DISCLOSURE in mid-January by Secretary of Agriculture Earl L. Butz of a research breakthrough in the control of vascular wilt diseases of trees has brought scientists closer to finding a cure for Dutch Elm Disease.

The disease that for more than 40 years has plagued the stately giants of America's historic past is now being conquered. The chance for complete eradication is still far off, but organizations, concerned citizens and scientists are now working with renewed interest to combat this disease that annually takes many thousands of elm trees in its toll.

The breakthrough described by Secretary Butz is a technique of making an essentially insoluble chemical soluble and rapidly injecting it directly into the elm tree, rather than through the soil. The chemical—benomyl—has been under intensive investigation by plant pathologists at the USDA Plant Science Research Division's Shade Tree and Ornamental Plants Laboratory at Delaware, Ohio. The situation confronting these scientists initially was that while benomyl fungicide exhibited local systemic properties, i.e. xylem movement from the point of entry upward to twigs and leaf tips, not enough of the chemical could be economically applied in other than a laboratory situation to effectively combat Dutch Elm Disease. Now with the

(continued on page 63)

EDITOR'S NOTE:

The Environmental Protection Agency has just Federally registered Benlate benomyl fungicide as an aid in the control of Dutch Elm Disease. The Du Pont Company, manufacturers of the product, said Benlate is recommended for use on elm trees as a foliar spray or trunk injection treatment.

Du Pont cautions that the label says that Benlate is to be used by trained arborists in conjunction with sanitation and insect control programs. Consult with local and state authorities for additional information concerning the use of Benlate.

Ag-Organics Department, Midland, Michigan 48640

Dursban insecticide. Bugs have another name for it.

They call it "The Unsurvivable One!" Because nothing wipes out chinch bugs, sod webworms and many other serious turf pests like DURSBAN* insecticide. And DURSBAN insecticide won't leach. It has excellent residual activity. It's safe, too, for all common turf grasses. And economical—you get more bugs for your buck, because so little goes a long long way. Ask your Dow distributor or your contract applicator for "The Unsurvivable One!"

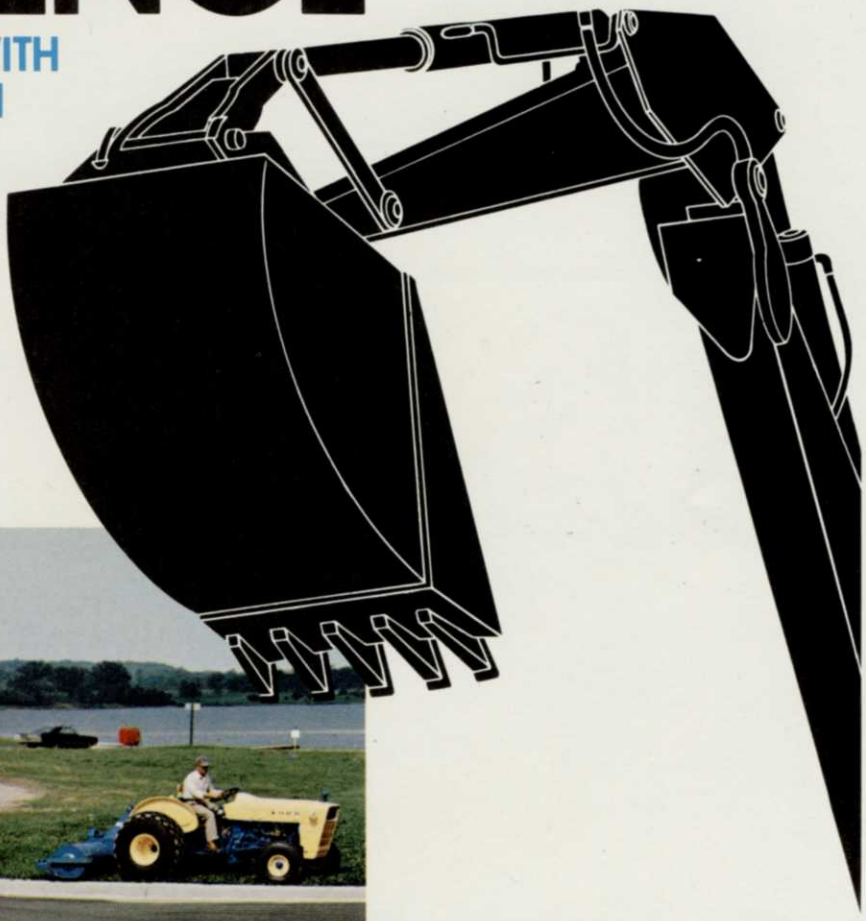
*Trademark of The Dow Chemical Company

DOW

DOW CHEMICAL U.S.A.

THE FORD DIFFERENCE

PRECISION DIGGING WITH THE POWER OF AN ARM INSTEAD OF A WRIST.



Many backhoes dig only with the curl of the bucket. They scoop instead of dig.

Ford is different. A Ford backhoe *pushes* the bucket through dirt. That's because boom and crowd cylinders are mounted *in-line*. So the full power of both cylinders can be applied at once. You get the muscle of the entire backhoe digging in a strong, *arm-like* motion.

A Ford backhoe also has super-sensitive hydraulics and easy-acting controls. The result is *precision* bucket action in areas where you can't afford to tear up surrounding turf.

Your Ford tractor dealer will show you some other Ford backhoe differences. Like box-beam construction, arched boom design and a new line of Ford backhoe buckets!

NUMBER ONE ON WHEELS

FORD TRACTOR

Ford

Your Ford industrial tractor and equipment dealer is listed in the Yellow Pages under "Tractors" or "Construction-Equipment." See him for information on how to buy, lease, rent or finance.

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TOTAL TURF CARE IS HERE!

Get a full course of protection against weeds and disease.

Dacthal®

Start your Total Turf Care this year with Dacthal W-75 herbicide. Or use the convenient 5 percent granular form if you like.

Dacthal gets the jump on most annual grasses and broadleaf weeds. This preemergence herbicide prevents weeds as they germinate. Crabgrass and *Poa annua* don't have a chance. Yet, Dacthal is a truly selective herbicide that will not affect established grass. It's even safe for new grass when used according to label directions.

Just one application in early spring will control weeds for a full season. In the case of *Poa annua,* another application in late summer keeps this late germinating pest out of sight.

Don't worry about residue build-up either. Dacthal degrades in one season; it's not persistent in the soil.

Dacamine®

For those areas where broadleaf weeds are a problem, use Dacamine Turf herbicide to sustain your Total Turf Care. Postemergent Dacamine kills dandelion, plantain, poison ivy and most other broadleaf weeds.

Dacamine is a special form of 2,4-D, non-volatile, yet very effective. It combines the weed-killing power of an ester with the safety of an amine. So Dacamine stays put – kills the weeds you spray it on but won't vaporize and damage valuable plants nearby.

Dacamine is an oil soluble concentrate. This allows it to penetrate waxy leaves and move all the way to the roots – killing the whole plant.

Daconil 2787®

Total Turf Care includes broad-spectrum disease control. Daconil 2787 is the one fungicide that solves most disease problems. Why use a group of fungicides to do what Daconil 2787 can do by itself?

Use Daconil 2787 to prevent or cure Brown Patch, Copper Spot, Dollar Spot, Leaf Spot, Melting Out, Pink Snow Mold (in Washington and Oregon only) and more. Many leading golf courses use Daconil 2787 in their disease prevention program.

Daconil 2787 has performed well on over 25 grass species and varieties. Excellent turf tolerance allows you to use it even in hot, humid weather.

Just mix Daconil 2787 with water and spray. You don't need a surfactant. It's compatible with many commonly-used pesticides. Follow label directions for exact usage.

Daconate®

Round out your Total Turf Care with Daconate postemergence herbicide. Get those escape weeds that slipped by your preemerge. Daconate will effectively control crabgrass, chickweed, wood sorrel and other hard-to-kill weeds. It's economical, too.

Daconate is a ready-to-use arsonate liquid, pre-mixed with the right amount of surfactant for maximum coverage and control. Since it is an organic arsenic compound, it does not have the more toxic properties of inorganic arsenic compounds, such as calcium or lead arsenate. For best results, spray Daconate during warm weather when weeds are actively growing.

FREE!

Get this Total Turf Care dial to help you solve many turf problems. Just a twist of the wrist helps you identify a problem and select a treatment. Send the coupon today for your Total Turf Care dial. Always remember to follow the label directions when using any chemical.

Be Diamond Sure!

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Diamond Shamrock Chemical Company
300 Union Commerce Building
Cleveland, Ohio 44115

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Position _____

Street or PO Box _____

City _____ State _____ Zip _____

Diamond Shamrock Chemical Company
A UNIT OF DIAMOND SHAMROCK CORPORATION

Accutrol—Industry Unites Chemicals And Air

HARNESS air to apply chemicals! That's the latest way to spray chemicals for brush control.

Sound incredible? Velsicol Chemical Corporation doesn't think so. They've developed a new concept in spray application that is winning much attention from applicators across the country.

Called Accutrol, the new system:

1. minimizes drift and environmental problems.
2. reduces the number of times required for refilling spray tanks.
3. increases the efficiency of the chemical being sprayed.

Accutrol basically consists of two parts, a special nozzle and spray adjuvant. The nozzle produces large droplets of air emulsion which have little or no tendency to float in the air.

This applicator accomplishes a precision spray job with minimum drift. A variety of spray patterns are available with the Accutrol handguns.

Large droplets ordinarily would not provide good coverage because there would be too much space between the droplets, but the spray adjuvant compensates for this by causing the droplets to spread over the surface of the plant, thereby increasing the area of contact. The adjuvant also reduces spray run-off by causing the chemical to stick to the target plant and to penetrate through the waxy surface of the plant.

The nozzle and adjuvant create a spray mix resembling foam, although Velsicol is careful to point out that it isn't really foam. It's a mixture of air and water and is called an "air emulsion".

"The difference between air emulsion and foam, as most people think of it, is that foam is thick and heavy and does not readily break apart," says Phil Nathan, product manager for Accutrol. "A heavy type of foam that does not readily flow would not be appropriate for brush control because coverage would not be thorough. Accutrol flows readily and rather resembles the froth on top of milk rather than the thick, heavy type of foam that comes out of a shaving cream can."

Drift control is only one advantage of Accutrol. The white spray is highly visible against green vegetation. The applicator can see the volume of the spray and see where the spray is falling and make necessary adjustments, thereby minimizing skips and reducing excessive spray usage.

Savings in time is another major advantage. Only one spray tank is needed. With Accutrol the number of times required to refill spray tanks is reduced. Less water is required be-

(continued on page 53)

Your first step to healthier turf

1 Spring is the time to take it

Leaf Spot problems caused by overwintering spores of Helminthosporium spp. can spoil the health and beauty of your turf this spring. So can Rust and Rhizoctonia.

But if you apply TERSAN® LSR now, you can break the Helminthosporium spp. cycle before it becomes a costly problem. You stop Leaf Spot before the "melting" or "fading" out stage. And Rust and Rhizoctonia don't get a chance to damage your turf.

The application of TERSAN LSR to tees, greens and fairways in the spring is the first step in the Du Pont TERSAN 1-2-3 Disease Control Program. The program that prevents or controls all major turf diseases on all common grasses throughout the entire year.

The TERSAN 1-2-3 Disease Control Program is effective, economical and entirely non-mercurial. It has been proven by hundreds of professional turf men throughout the country.

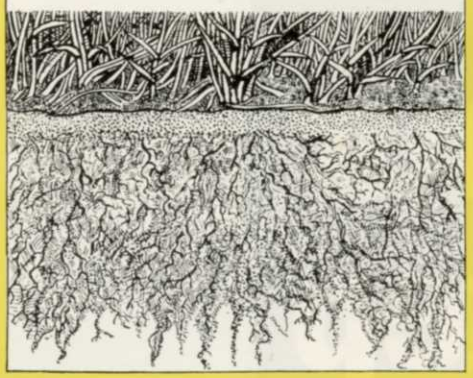
For complete details on the program and a supply of TERSAN fungicides, see or call your golf course supplier today.

With any chemical, follow labeling instructions and warnings carefully.

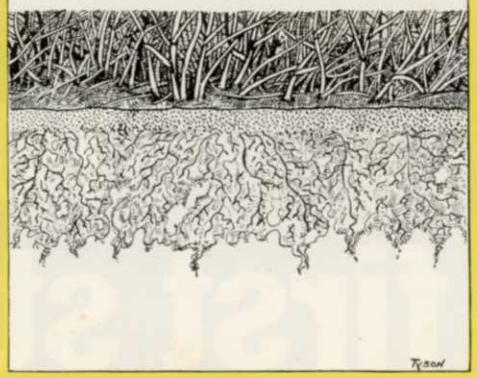
DU PONT TURF PRODUCTS

COMPARE ROOT SYSTEMS...

Fed with NUTRICULTURE formula



Fed with ordinary fertilizer



PLANT MARVEL® BRAND

START PLAY 2 WEEKS EARLIER!

S-T-R-E-T-C-H YOUR SEASON

Begin when ground temperature passes 50°

2-WAY FEEDING CREATES SUPERIOR TURF IN 3 DAYS

Send for FREE sample of Bent Special (28-8-18) plant food. Then, feed-as-you-water a 50-square foot test area in your nursery or practice green. See the test plot respond vigorously to 2-way turf and root feeding in just 3 days.

... by applying

NUTRICULTURE

"Bent Special" Formula

(28-8-18)

The instantly-available nutrients of NUTRICULTURE* formulas assure quick-start growth of turfgrass earlier in the Spring. Growth response need not wait for soil temperature to warm up to the 70° that dry fertilizers need. Quick absorption of the life-giving NUTRICULTURE elements by both grass blades and roots produce instant greening of turf . . . and make for earlier play on livelier-looking, beautiful greens. You'll want to use NUTRICULTURE formula "Bent Special" (28-8-18) on your turf all season long.

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LETTERS TO THE EDITOR

WE ARE CONGRATULATED

The members of the Maryland Turfgrass Association have asked me to thank you for the publicity given our association . . . in the January 1972 issue WEEDS TREES AND TURF. Our organization is seven years old now and we are growing at a rapid rate. We certainly do appreciate the publicity given to our organization by your excellent magazine. JOHN R. HALL, Secretary, Maryland Turfgrass Association.

PERMISSION GRANTED

We would like to adapt and condense the article, "Sulfur for Turfgrass," by Dr. Fred Grau, which appeared in the February, 1972 issue of your magazine.

Incidentally, you put together an excellent journal.

We will head our version this way: Condensed and edited from WEEDS TREES and TURF magazine ... Santford Martin, Editor, Potash Institute of North America, Atlanta, Ga.

WE ARE COMPLIMENTED

I want to take time and thank each . . . of you that has a part in the WEEDS TREES and TURF magazine . . . I am one of the grateful one's who receive this magazine and I hope you all the best of luck . . . and keep up the good work. Kenneth Courtney Sr., Great Falls, Montana.

A READER WRITES

I want to thank you for helping to make our second Grounds Maintenance Conference a success. We had 300 professionals attend this conference and it was a huge success; in fact a television station did a show on it.

. . . I receive your excellent magazine at my office . . . I like to keep back issues for reference purposes. . . . Ted W. Stamen, extension agent — home horticulture, New Haven County Extension Service, Wallingtford, Conn.

TOO MANY WEEDS

. . . . I wish there were more in your magazine about plant and tree diseases instead of so much about weeds — you might reach three times as many people if there were. Jim McNally, San Francisco, Calif.

TIME TO RENEW: Your Renewal Card Is Bound In Above

We need your okay to continue sending you WEEDS TREES and TURF magazine on a *free* basis. In fact, we must have it.

We—and other publishers—have been somewhat remiss in the past in that we've sent your copy of the magazine whether or not you sent your card in. This can no longer be done.

As you know, subscriptions are free to bonafide members of the industry. You qualify. But economics has again reared its head and we must stabilize our circle of readers. We shall maintain the magazine circulation at 33,000—the number which constitutes the basis for our advertising rate. No additional magazines will be sent except at the published rate of $10 per year in the U. S. and Canada.

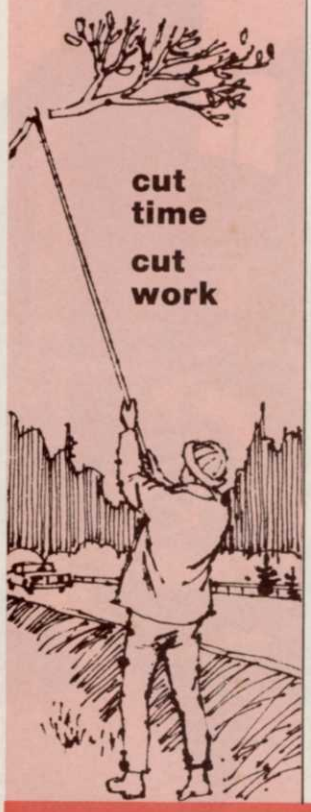
MAY WE HEAR FROM YOU—by way of the bound in card above? Simply tear it out—SIGN and check your answers. DO NOT LOSE YOUR FREE SUBSCRIPTION TO SOMEONE ELSE. We want your continued support and we need you on our list.

Thank you.

Art Edwards, Editorial Director

(This renewal notice is a requirement of our national auditing service to verify that you are a member of the industry and that you wish to receive the magazine).

Ackley hydraulic powered tools



Ackley tools put you in complete control of big gardening/landscaping jobs. Deliver plenty of power for cutting, clipping, pruning, sawing.

New Ackley Swivel Pruner (illustrated) is designed for fine pruning on new wood or young trees. Gives you the cutting angle you need instantly. Lightweight hook. 360° swivel handle for hard-to-reach areas. 3 to 5 foot lengths.

Need more help? Check with Ackley for pistol-grip chain saws, pole chain saws, pole circle saws and additional pruners. Farm or garden tractor provides the hydraulic power source.

For more information/literature, call Harold DePue, Sales Manager, (503) 659-5660. Or write:

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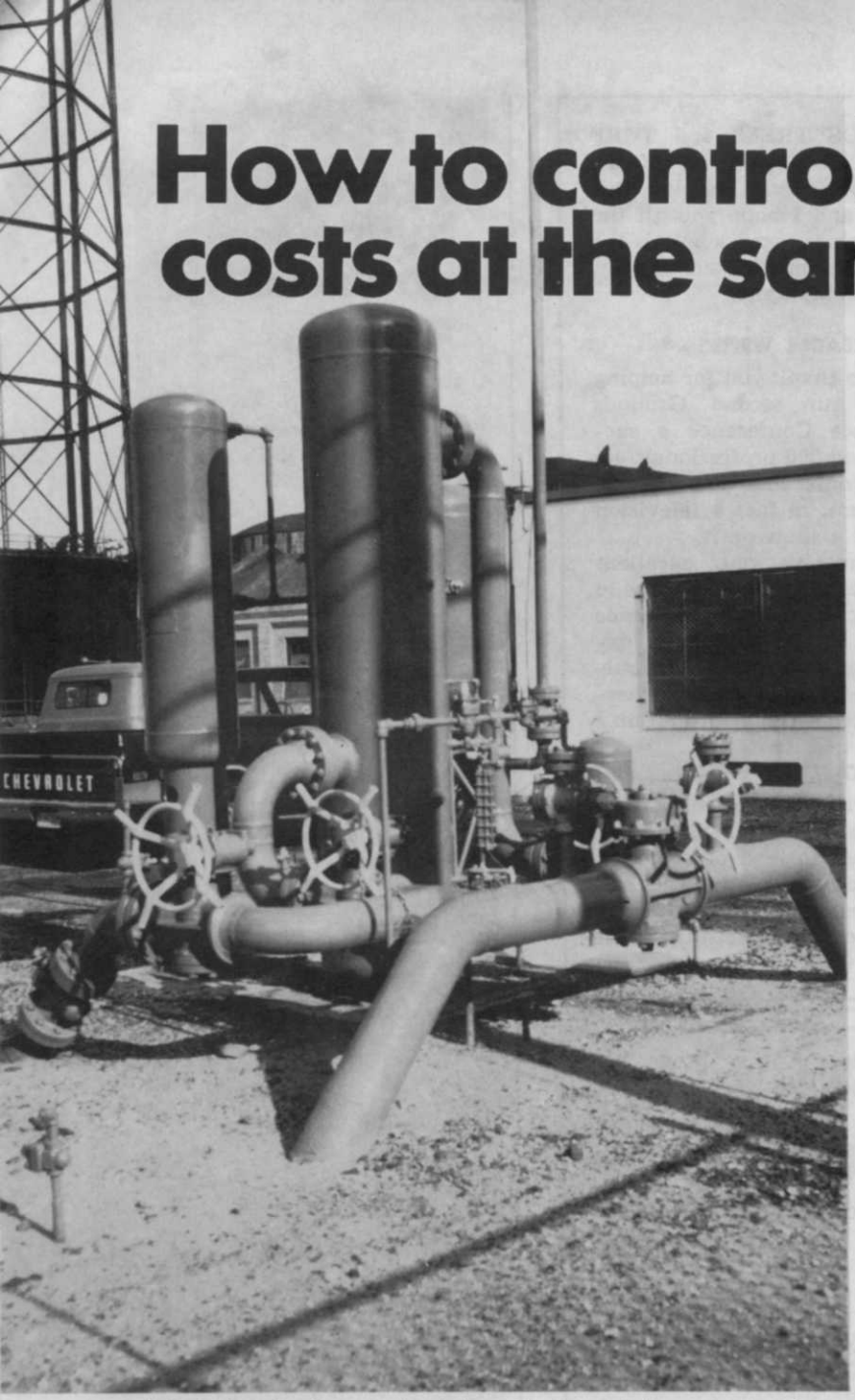
ACKLEY

For More Details Circle (136) on Reply Card

How to control weeds and costs at the same time.



In industrial applications, as shown here, Tandex controls weeds along fence lines, parking areas, ditches, pipelines, sidings, storage areas, tank farms, and sign posts.

Weeds are expensive.

They are everything from a fire hazard to a haven for unfriendly rodents.

They can corrode a fence line.

Make people sick.

Destroy the drainage efficiency of a railroad's right-of-way.

Millions of man-hours and thousands of machines are fighting the war against weeds.

A very expensive war.

Weeds hit some harder than others

The weed onslaught is particularly damaging to such operations as railroads, utilities, oil fields and highways, as well as general industry.

This message is especially addressed to operations like these—it is a message about Tandex®, the soil sterilant that can drastically cut the cost of weed control programs.

Tandex—what it is and what it does:

Tandex is a urea-carbamate compound that's demonstrated exceptional control over weeds, grasses, vines, brush and the hard-to-kill woody species.

Tandex does its weed-killing job by being absorbed through plant roots.

Once applied, Tandex can last a whole season, or longer. Yet it's relatively non-hazardous to man, animals or fish.

A distinct advantage of Tandex is its stability in the soil. Put another way, this means it has minimum lateral movement—which reduces the danger to nearby trees and shrubs you *don't* want to lose.

Tandex can be sprayed or applied in dry granular form. It can also be combined with other herbicides for special control situations.

For more information, write to Industrial Chemicals Dept., Niagara Chemical Division, FMC Corporation, Middleport, New York 14105.

Tandex®
Herbicide

It gets to the root of weed problems

Industrial Chemicals Dept.,
Niagara Chemical Division,
Middleport, New York 14105
Tandex® is a registered trademark
of FMC Corporation.

fmc® CORPORATION

More than 40,000 square feet of exhibit space was utilized at the 43rd International Turfgrass Show. Attendance was 4,053, up a total of 568 over last year's Denver meeting.

43rd International Turfgrass Conference and Show

EXPO – COMMERCIAL TURFGRASS

Golf course superintendents continued their tradition for the greatest show on turf," a theme adopted last year and again appropos at Cincinnati in 1972.

Meeting in the Cincy Convention-Exposition Center, February 13-18, they hosted more than 4000 members and guests for a new record and sold 170 more exhibit booths than ever before, utilizing 40,000 square feet of space. Equipment for this market was on hand, in most any make or model. And the busiest people at the show, aside from the host delegation, were exhibitors who manned booths.

Biggest conference drawing card—and a feather-in-the-hat for the program committee — was the appearance of Washington, D. C.'s Ralph Nadar. He played his ecology line for an overflow crowd complete with speakers to carry the message to a lobby crowd too large to gain entrance to the main hall. A safe assumption may well be that Nadar failed to excite this crowd with his stereotyped presentation, little of which was new, and all of which was read with little noticeable enthusiasm.

Keynote speaker Ralph Nader, Washington, D.C.

However, Nadar was followed by almost 50 leaders in the business of commercial turfgrass and its various segments. The '72 conference was loaded with both practical and technical information for the working golf course superintendent.

New president for the coming year is Robert V. Mitchess who becomes 36th president of the Golf Course Superintendents Association of America (GCSAA). He is superintendent at the Portage Country Club at Akron, Ohio. Prior to this position which he accepted last year, he spent 13 years as superintendent at the Sunset Country Club, St. Louis, Mo. He succeeds outgoing president, Richard C. Blake, superintendent at Mount Pleasant Country Club, Boylston, Mass.

Mitchell in taking office pointed to the big strides made recently by the

(continued on next page)

Table 1. Conference attendance continues high for the national turf conference staged by the GCSAA. Statistics for the past five years are as follows:

	Cincinnati Ohio (1972)	Denver, Colorado (1971)	Houston, Texas (1970)	Miami Beach, Florida (1969)	San Francisco, California (1968)
Members	1309	1076	1182	1078	902
Ladies	455	564	592	620	610
Guests	226	234	189	194	192
Greens Chairmen	250	214	211	506	90
One Day Admission	609	333	419	285	286
Turf Students	219	142	52	57	13
Exhibitors	985	922	975	771	730
Total Registration	4053	3485	3620	3511	2823

GCSAA which consists of a superintendent certification program, a pesticide information dissemination program, and an association management seminar program which will be initiated this year.

Mitchell stated that he believes the association will continue to grow in both numbers and activities. He points to plans for moderizing operations to cope with the expected growth. Membership records are alreading being processed with newly installed electronic data processing. A new administrator will be hired this year, he pointed out, to replace Ben Chelvin who resigned as executive-secretary early this year.

Special recognition was given 44 superintendents who were the first to complete requirements and achieve eligibility for the title of Certified Golf Course Superintendent. More than 30 of the 44 were on hand for the Conference. Primary requirements include membership in the association plus a tenure as a Class A member for three years. A comprehensive testing program is also mandatory.

Typical of conference discussions was that by Dr. Elwyn E. Deal, University of Maryland, College Park, Md. He stressed the impact of legislative decisions on plant protectants and how they relate to golf course management.

Deal pointed out that the subject of pesticides is so complex that it behooves all in the commercial turfgrass industry to be as well informed as possible. He urged the group to take every opportunity to read, listen, think and discuss this subject. The 60,000 pesticide products now registered for us in the U.S. are made from one or more of some 900 chemical compounds, he said. About half of the products registered by the Environmental Protection Agency are for nonagricultural uses such as around homes, apartment buildings, and industrial plants. The greatest volume however, he said, are for farm uses, including golf course turfgrass. Value of pesticides sold in 1970, Deal said, amounted to $870 million. Total use was slightly more than one billion pounds.

Dr. Elwyn E. Deal, Cooperative Extension Service, University of Maryland, College Park.

Deal believes that the next few months and years will be crucial in determining the future direction of the use and availability of pesticides in this country. Thus, he urged superintendents to take active steps in making their needs for pesticides known.

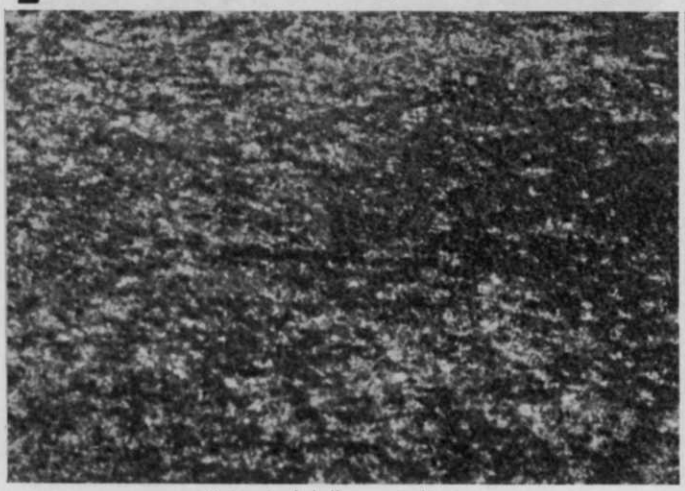
The association announced that Boston, Mass. has been selected as the site for the 44th International Turfgrass Conference and Show. Dates will be January 7-12, 1973 and the Statler Hilton Hotel will serve as the association's headquarters.

"The Conference this year has been the best ever both in terms of our meaningful educational program and the broad and extensive display of equipment and products at our show. We expect the Conference and attendance in Boston to even exceed the response in Cincinnati." So said newly elected GCSAA president Mitchell.

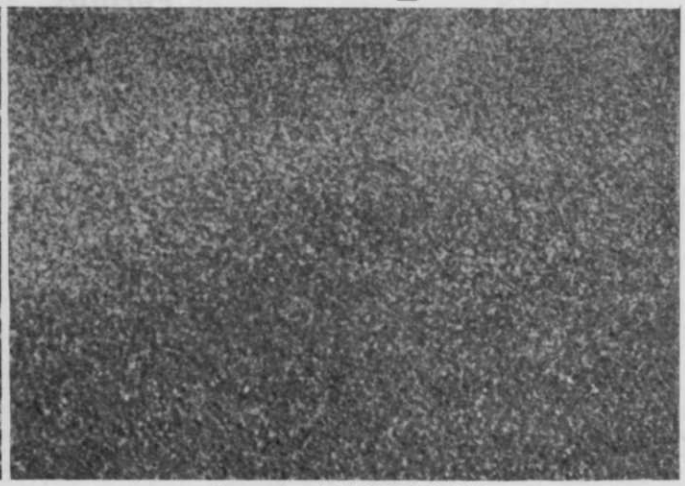
The association has a 3,000 worldwide membership with headquarters at Des Plaines, Ill.

GCSAA Officers and Directors for 1972: l. to r. (front row), Richard C. Blake, Boylston, Mass., president emeritus; Clifford Wagoner, Modesto, Calif.; Robert V. Mitchell, president, Akron, Ohio; Paul Mechling, Sylvania, Ohio, director; (back row), T. W. Woehrle, Birmingham, Mich., director; Palmer Maples Jr., Atlanta, Ga., director; Richard W. Malpass, Portland, Ore., director; Carleton E. Gipson, Conroe, Tex., director; and Charles G. Baskin, Waterbury, Conn., secretary-treasurer.

When dollar spot hits, here's how new systemic MERTECT® 140-F flowable saves your turf, time, and money.



Untreated dollar spot disease



Treated with MERTECT 140-F

These pictures show the kind of dollar spot control you get with new flowable MERTECT 140-F. Even against cadmium-resistant strains. It also works well against brown patch and *Fusarium* patch.

And with its special advantages, MERTECT 140-F makes the performance picture look even better.

Being flowable, it saves you time in measuring and mixing. Handling is safer. Dispersion is more complete, so you get the right mixture for more effective results.

Since MERTECT 140-F is systemic, you also get away with fewer applications per season, thanks to its residual disease control. And it has a lower dosage rate than other fungicides, so you save there, too.

Just follow the label instructions. MERTECT 140-F is not phytotoxic to grasses when used as directed. Your Merck distributor has new flowable MERTECT 140-F now. If you don't have his name, write us. Agricultural Products, Merck Chemical Division, Merck & Co., Inc., Rahway, N.J. 07065.

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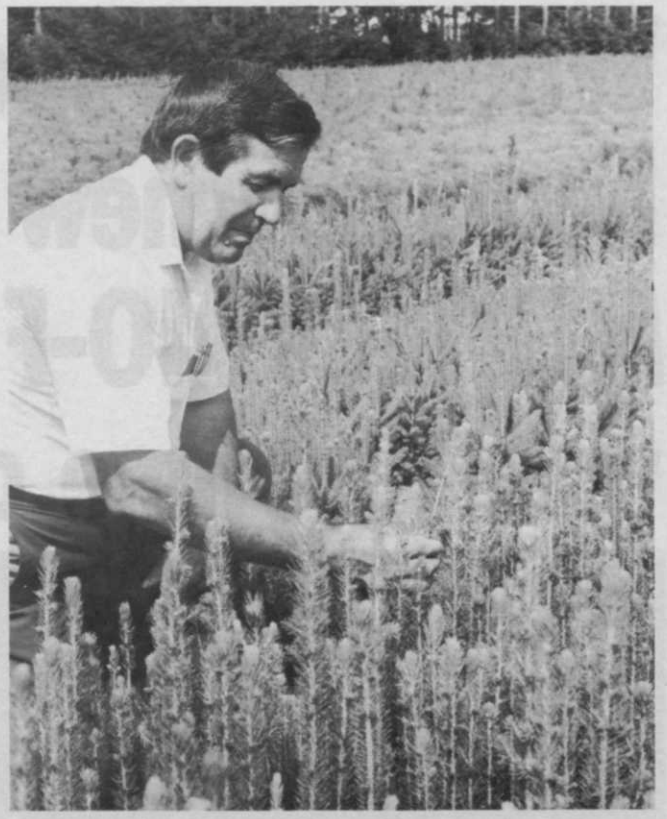
For More Details Circle (143) on Reply Card

WINTER-HARDY ORNAMENTALS

The Key Is Year-Round Fertility



Two-year-old white spruce seedlings are checked by Dr. Robert J. Schramm, Jr. at Pachaug State Forest Nursery, Voluntown, Conn. More budding and branching was found in plots under year-round fertility tests.

THERE'S a new outlook for ornamentals and forward-looking nurserymen through a new concept for producing nursery stock, says Dr. Robert J. Schramm, Jr., extension nurseryman and associate professor of ornamental horticulture at the University of Connecticut in Storrs, Connecticut.

Through this new concept called "Year-Round Fertility", Dr. Schramm reports that many nurseries have the potential for improving plant growth and quality of stock over a shorter period of time. With some species, three years of normal growth can be realized in just two seasons. An added benefit is an improvement in winter hardiness. It all adds up to increased opportunities for nursery profits.

Basically, the concept calls for 1) building up all plant nutrients in the soil to "optimum" levels based on soil analyses (these levels are below the toxic level, but high enough to overcome the "Law of the Minimum"); and 2) maintaining nutrients at these levels through regular soil sampling and periodic application of the required nutrients, especially nitrogen, phosphorus, and potassium. with this approach, no essential nutrient is believed to function under the "Law of the Minimum".

In essence, the idea for Year-Round Fertility has been taking shape for some time. Three years of research in Connecticut have established the benefits in the Northeast and have also confirmed earlier studies by Dr. Schramm in North Carolina In this earlier work on azaleas and rhododendrons it was found that under a year-round program more flowers were produced per plant and also these flowers opened sooner in the spring and stayed open longer with better color than when plants were grown under a conventional fertilizer program. With a conventional program, fertilizer is applied only during the active growing period (May through August).

In Connecticut, many of the traditional ideas and recommendations for growing nursery stock were based on practices used by tobacco and potato farmers. Frequently, the nurseryman simply applied whatever fertilizer the local dealer had on hand. And so crop recommendations, passed from father to son, became the accepted way to fertilize nursery stock.

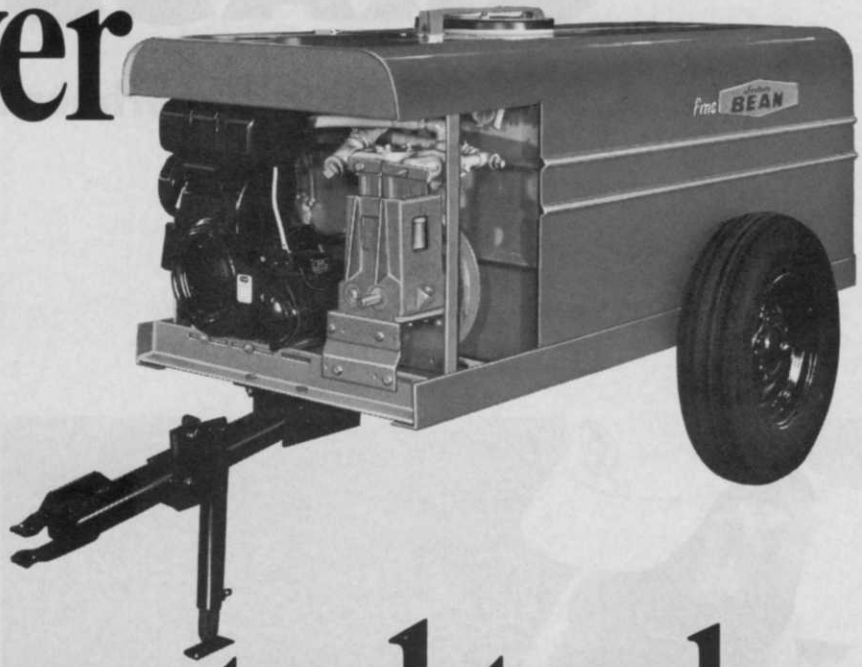
Dr. Schramm has now initiated a new approach. He has been working to help nurserymen and others grow marketable, high quality plants in the shortest period of time to realize maximum profits. Workers in many other states have also been looking at ways to push stock for maximum production, but results in many instances involved injury to plants. Fertilizer burn or freeze damage often stemmed from improper timing and improper rates of fertilizer.

Early in Dr. Schramm's studies came a decision to look at the complete analysis of the soil in which a plant would be grown. The first question he felt a nurseryman should answer is, "What does the soil test show?" Without knowing the nature of the soil, it is impossible to treat and fertilize growing stock properly. Here is where the "Law of the Minimum" comes into play. Soil analysis may show prescribed levels of nearly all elements essential for proper growth but a low level of just one element will prevent the plant from reaching its maximum potential. It's like the old adage — a chain is no stronger than its weakest link. A complete soil analysis will usually tell you what is lacking.

The value of fall fertilization has recently been demonstrated by Dr. Harold B. Tukey, Jr., of Cornell University. He found that when the tops of plants become dormant in the late fall or early winter, the roots

(continued on page 42)

more dependable than ever Bean-with stainless steel tanks



No matter what your spraying job is, John Bean all-purpose hydraulic sprayers have been proven low and high-pressure performers for many years. Now available with stainless steel tanks on all models. You can be confident of getting the most for your sprayer dollar with Bean.

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Jonesboro, Ark.—Ocoee, Fla.—San Jose, Calif.

FOR SHADE TREES *Bean sprayers are equipped with quick-adjust guns for solid stream or fine mist applications. Or, select from a range of air sprayers. Ask about the Rotomist with stainless steel tanks.*

For More Details Circle (132) on Reply Card

ZOYSIA GRASS

Mel Anderson's Bold Experiment

Mel Anderson checks zoysia grass turf for incidence of disease. He uses Daconil 2787 to control dollarspot and Helminthosporium. Dacthal W-75 controls crabgrass and chickweed.

FIVE years ago, when Mel Anderson set out to build a golf course from scratch in Lawrence, Kansas, he took a gamble. He would put the entire 18 holes in Zoysia Grass. As part owner, as well as course manager, he had more than his job at stake.

His gamble is paying off. Alvamar Hills Golf Course, a public course, is attracting golfers from miles away. The players like the zoysia turf. It gives the balls a good lie during long, dry spells and even in the winter months when a good deal of golf is played in Kansas.

Mel Anderson knew quite a bit about zoysia before he started Alvamar. While working under Charlie Sidenstucker at the St. Joseph Country Club in St. Joseph, Missouri, he helped install zoysia nurseries and worked with zoysia on tees. Anderson also had considerable experience while managing the Lawrence Country Club prior to assuming the responsibility of building Alvamar Hills. During these years he felt zoysia could be grown by stolonization, and it has proved very successful.

He liked its drought and weed-resistant qualities. He knew that it had taken intense punishment from the heavy traffic on tees and playgrounds. It spread rapidly and was winter hardy.

Anderson had the common problems of converting new land into a golf course. The 180 acres he had to work with included farm land, scattered trees and some timber. After clearing the timber where needed to make an interesting course, he turned the soil. The soil type in the area included a layer of gumbo lying over limestone rock.

Once the soil was worked, he soil-tested to determine what should be added. The elements included lime, potash and some trace minerals. He applied two pounds of nitrogen per 1,000 square feet every 10 to 14 days at the start. And now that the turf is established, he continues to apply about one pound per year.

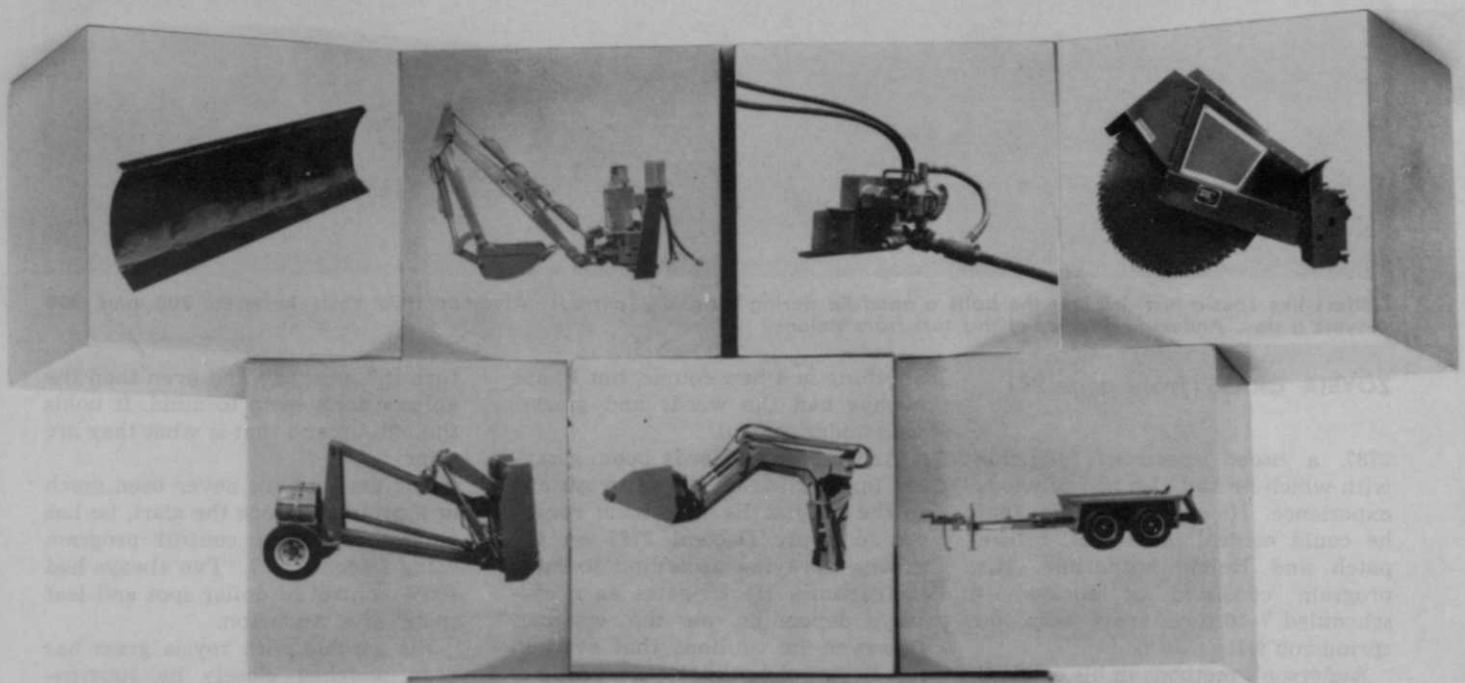
At the same time, he installed an underground irrigation system.

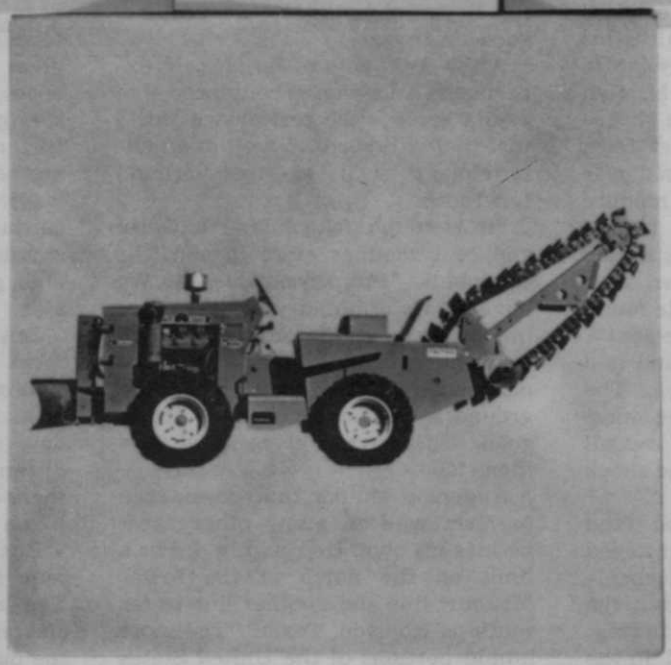
Weeds and fungus diseases were his next problem. On the basis of his past experience, he selected Dacthal W-75, a preemergence herbicide, to handle weeds and broadleaf grasses in his fairways, roughs and on tees. Crabgrass and chickweed were his chief targets, but he knew that Dacthal would also handle the occasional annual grasses that he anticipated.

To control disease in his C-7 bentgrass on the greens, he chose Daconil

(continued on page 30)

Build from the bottom... by starting at the TOP!





The Ditch Witch "building block" concept of modular digging gives you top superiority, top versatility for your underground requirements.

START AT THE TOP . . . with Ditch Witch superiority! Top technical design, operational superiority, product development, service-after-the-sale. Put them all together and Ditch Witch is tops in its class, with more sales* than all the competition put together.

BUILD FROM THE BOTTOM . . . with Ditch Witch versatility! Ditch Witch modular attachments allow you to convert quickly, inexpensively from basic trencher to backhoe or plow to earth saw or front-end loader. All in all, you can handle eight digging/clean-up operations.

Let us tell you about the complete range of modular attachments, today . . . and enjoy top versatility by starting at the top . . . with Ditch Witch!

*U.S. Dept. of Commerce, Bureau of Census, 50.5 per cent of 1970 sales (1971 sales figures not yet available).

DITCH WITCH

Charles Machine Works, Inc./P. O. Box 66/Perry, Oklahoma 73077

TRENCHING VEHICLES FROM 7 - 65 HP . . . MODULAR ATTACHMENTS FOR EIGHT SEPARATE DIGGING FUNCTIONS

Golfers like zoysia turf. It gives the balls a good lie during long dry periods. Alvamar Hills hosts between 200 and 300 players a day. Anderson developed this turf from stolons.

ZOYSIA GRASS *(from page 28)*

2787, a broad spectrum fungicide with which he had also had previous experience. He was confident that he could control dollarspot, brown patch and Helminthosporium. His program consisted of sprays — scheduled 7-10 days apart — in the spring and fall.

Anderson's methods in his original stolonization were as unusual as his decision to go all out with zoysia. He produced all the zoysia from his own nursery at Alvamar. Then he shredded the stolons in an ordinary farm ensilage grinder. The zoysia was finally spread with a regular manure sprader. He lightly dished in the stolons. Part of the course was seeded at a rate of 250 bushels per acre, another part at 300 bushels. He found no difference in the stands he got.

"Stolonizing for a good stand is a tricky process," says Anderson. "The first 10 to 15 days are the most critical. You have to keep it wet all the time until it is through the shock stage."

Though zoysia exhibits good weed resistance, Anderson has maintained a consistent chemical and mechanical weed control program from the start. Each year, he continues to treat the course with Dacthal W-75, in the spring as a preemergence control. Rate is 12 to 14 pounds per acre and application is made about April 15. "I use it primarily to get the silver and the soft crabgrass," says Anderson. "But it works on the few, occasional broadleaf weeds, too. Most everyone knows that you can get anything in a new course, but I have always had the weeds and grasses well under control."

Anderson uses Hardy boom sprayers for Dacthal on the fairways and in the roughs. He uses hand sprayers to apply Daconil 2787 on the greens, spraying according to label instructions. He irrigates as necessary, depending on the weather. However, he cautions that even in the dryer climates, zoysia requires good drainage.

After five years of large scale experience, Anderson is convinced that zoysia grass is the best answer for a turf that will perform well in an environment such as that around Lawrence.

"It is tough to combine a warm and cool weather grass in one," he comments. "But zoysia does it. We have plenty of hot, dry weather here in Kansas, and the zoysia loves it. Between severe winter storms, we also have a lot of days when the ground is clear and golfing is pretty good. The zoysia gives good turf then, too."

Anderson thinks that zoysia can perform well in many other areas besides his own. He roughly draws a limit on the north at the Iowa-Missouri line and another line as far south as Houston, Texas. "The more humid portions of the United States and a longer growing season may tend to produce a matty, thatching condition," he thinks. Soil types all look about alike to zoysia, he maintains.

Anderson doesn't worry much about zoysia's reputation for tanning out. "It takes a good, hard freeze to turn it," he says, "and even then the golfers don't seem to mind. It holds the ball up and that is what they are after.

The greens have never been much of a problem. Since the start, he has kept them on a control program using Daconil 2787. "I've always had 100% control of dollar spot and leaf spot," says Anderson.

His gamble with zoysia grass has been watched closely by superintendents throughout the area. He gives regular reports on his experiences to the University of Missouri turf grass conferences, and to other turf meetings. Several golf courses are now testing zoysia on a few fairways. "I get a lot of calls for consulting work and for installation of zoysia in fairways, football fields, and golf course construction," he says.

But most important of all, golfers seem to like Alvamar Hills Golf Course and its zoysia. The course hosts between 200 and 300 players a day, and some travel considerable distances to get to it. "Sometimes there are so many strangers, it looks like a resort course," says Anderson.

Business is so brisk that another nine holes are under development. The addition, which is being built on cleared timberland, will be open to the public in June, 1973. Mel Anderson's formula will be the same. Soil-testing to determine fertilizer requirements, zoysia grass stolens chopped and applied with a manure spreader, preemergence application of Dacthal with annual treatments to follow, and use of Daconil 2787 on the greens.

Light, lean and hungry

Never before has there been such a superb line of light, fast, tough and powerful line clearing and tree maintenance tools as these. Skillfully engineered, carefully built Limb-Lopper tools will give you years of dependable, low-maintenance service under tough operating conditions.

Limb-Lopper hydraulic and pneumatic power tools have become the performance standard of a demanding industry; the choice of tree experts who know their tools.

Now is the time to make your move up to Limb-Lopper.

Dealers nationwide. Write or call collect. Limb-Lopper Co., Inc., 11845 Burke Street, Santa Fe Springs, Ca. 90670. (213) 696-1128.

Limb Lopper

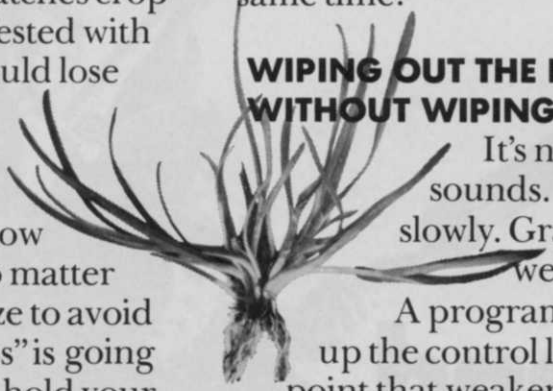
For More Details Circle (121) on Reply Card

How to remove the without removing

Every summer you've tried to hold your Poa annua. But suddenly it's unusually hot and humid and your fairways and greens start to wilt. Big brown patches crop up. You find your Poa annua infested with disease. You're in trouble. You could lose your fairways and greens.

Don't say it can't happen to you. It can. Because no matter how careful you are, no matter how much you water to avoid wilt, no matter how often and lightly you fertilize to avoid stress, one day your "failure grass" is going to fail. So why gamble and try to hold your Poa annua? Why not get rid of it before it fails?

How do you do it? How do you keep the course beautiful, the players playing, the Poa annua on the way out, and the desirable grasses on the way in, all at the same time?



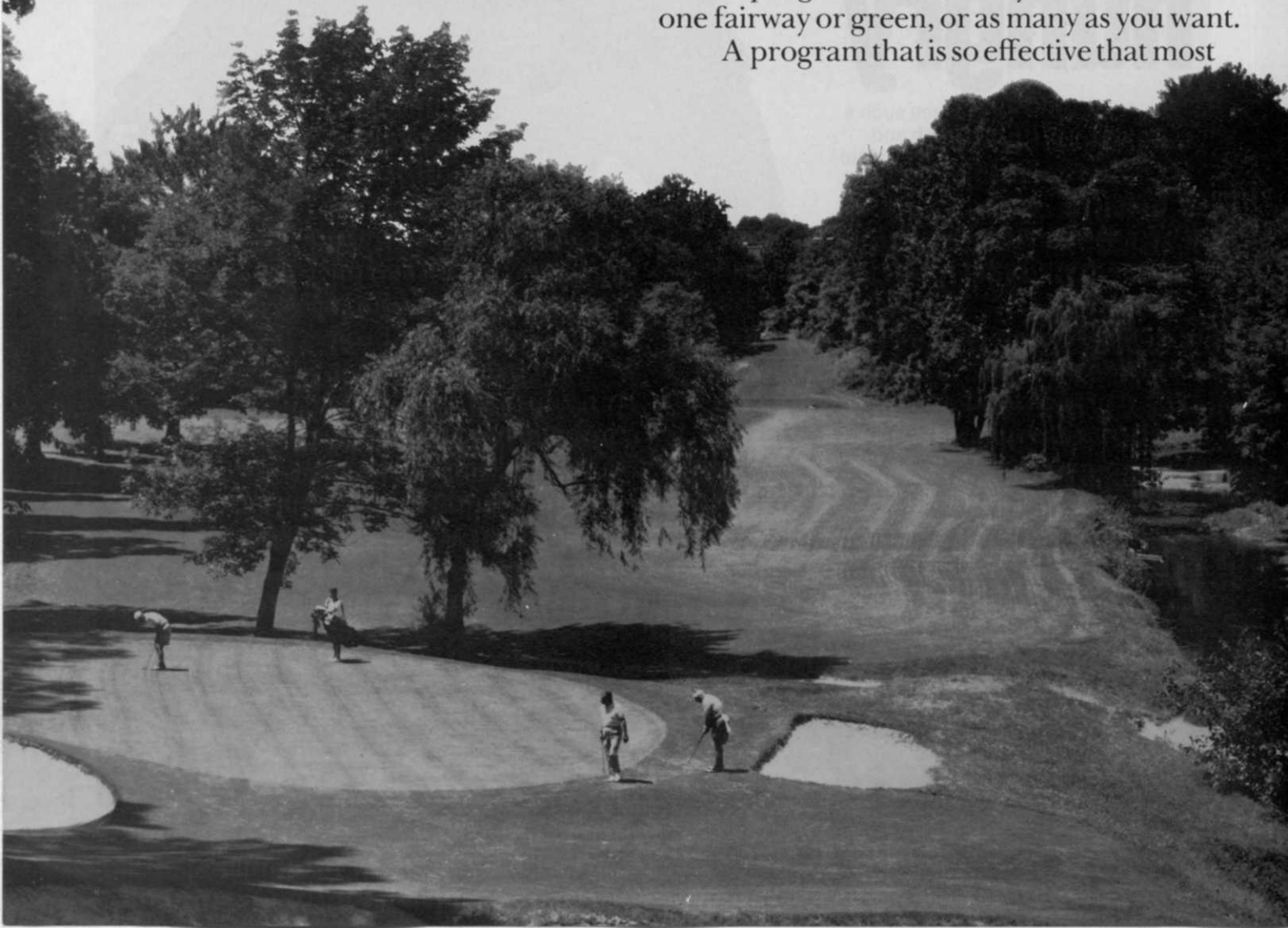
WIPING OUT THE POA ANNUA WITHOUT WIPING OUT THE COURSE

It's not as difficult as it sounds. Not if you do the job slowly. Gradually. With a simple, well thought out program.

A program that precisely builds up the control level in your soil to a point that weakens the Poa annua and allows the desirable bent and bluegrass to fill in.

A program that allows you to start with one fairway or green, or as many as you want.

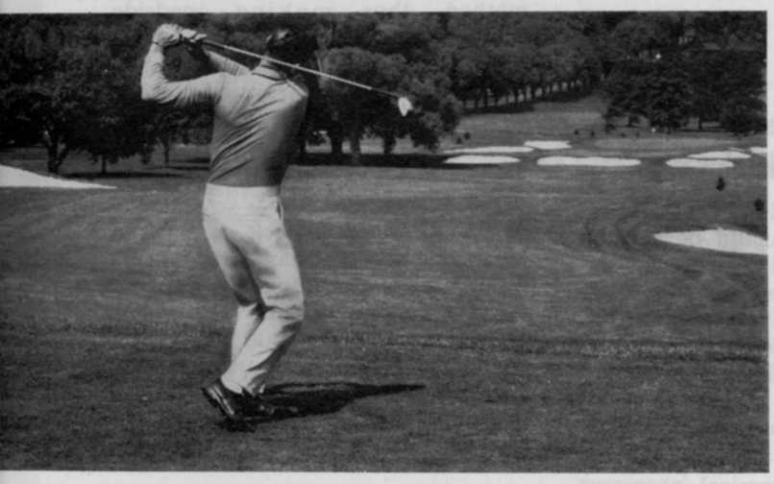
A program that is so effective that most



Poa annua the golfers

of your players won't even know that the course is being treated.

A program that even improves play by inhibiting the uneven, unsightly Poa annua seed heads.



A program that will work because it's already worked on many other courses.

A program that, in the final analysis, doesn't have to cost you an arm and a leg.

A SUCCESSFUL TESTED PROGRAM FOR THE GRADUAL REMOVAL OF POA ANNUA

This tested 6-point program is successfully eliminating the Poa annua at Greenbrier, National Cash Register Country Club and hundreds of other courses. It can do the same for you.

1. Drain low areas: Improve drainage of fairways with trenching and vertical slitting.
2. Correct soil acidity: Apply lime to greens or fairways if under a pH of 6.
3. Aerate, thatch or spike the grounds and eliminate phosphorous in your fertilizer program. Make room for new growth. Bring up some soil, get seed against soil. Overseed often.
4. Apply from 4 to 6 pounds of Chip-Cal Granular per 1,000 square feet on fairways, or 2 to 4 pounds on greens. Apply in the spring and fall. Vary application rates according to the percentage of Poa annua, available phosphate, pH and soil type.
5. Achieve Poa annua control: Light sandy soils low in phosphorus require less Chip-Cal to reach control.
6. Maintain control: Use 2 to 4 pounds of Chip-Cal per 1,000 square feet, either in the spring or fall. If Poa annua is dying too fast, use a liquid phosphate as a check valve.

Note: Chip-Cal Granular has been specially formulated for your Poa annua restriction program. It's granulated on a vermiculite base. Which helps give you a more uniform application and a more gradual release when you're building up your soil's control level. Chip-Cal also prevents crabgrass, goose grass, and controls soil insects and chickweed.

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For example, in the spring, Chipco Turf Herbicide MCPP controls clover and knotweed on greens and fairways. And in the summer, Chipco Microgreen improves your turf's health and vigor. Used in the fall and winter, Chipco Rho-Mold will prevent unsightly and destructive snow mold.

WANT TO KNOW MORE ABOUT POA ANNUA AND OTHER TURF PROBLEMS? WRITE US

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Wisconsin To Hold Arborist Training Seminars

Two separate one day seminars designed to train arborists in Wisconsin on the use of a newly registered systemic fungicide are slated for Thursday and Friday, April 20-21, respectiviely.

According to Dr. Gale Worf, plant pathologist, University of Wisconsin, the seminars are to provide additional exposure to arborists in terms of how work in Dutch Elm Disease control is accomplished. "We want arborists to understand the meaning and limitations of the Federal label for (Benlate) benomyl fungicide," he said.

Topics discussed during the training will include application of Benlate as a foliar spray and also trunk injection. The April 20 seminar will be held at Tyrolian House, Milwaukee. The Quality Motel in Madison is the site of the April 21 meeting.

Although the seminars are primarily for Wisconsin arborists, Dr. Worf says that arborists from out of state are welcome.

Benlate benomyl fungicide was accepted for Federal registration by the Environmental Protection Agency in early March. The label specifies that Benlate is to be used by trained arborists in conjuction with sanitation and insect control programs. The product has been considered by researchers as a positive step in the control of Dutch Elm Disease.

Dr. Worf says that the April seminars will be the first step in training arborists. Additional field activity is scheduled for mid-May. Here arborists can view spray demonstrations and injection methods. A final day is slated for early July.

Persons interested in attending the seminar should write to Maurice White, Short Course Office, Agricultural Hall, University of Wisconsin, Madison, Wisc. A $7.50 registration fee which includes course material and lunch will be charged.

Canadians Reduce Spray Drift on Ontario Highways

Spray drift during the application of herbicides could be a thing of the past, according to G. R. Stephenson, department of environmental biology, University of Guelp, Canada. He has conducted tests over a three-year period, in cooperation with the Ontario Department of Transportation and Communications.

Two types of chemical processes have proved effective in reducing drift. The first involves a particulating agent. A gel powder is injected into the spray tank. This powder absorbs the spray solution and swells to a defined particle size. With uniform particle size there is less chance of lighter particles drifting.

The second process is invert emulsion, the suspension of water in oil. The spray has a paste-like consistency. The number of fine droplets produced during the spraying process are reduced.

Under actual conditions, the new process can be carried out at a higher vehicle speed and lower spray volumes than with the old method, thus making roadside spraying more efficient. For example, a 500-mile median strip on Highway 401 was sprayed for weed control in three weeks using two vehicles. The job normally takes eight vehicles nearly two months using a standard spray.

The major drawback to such a new system is cost, says Stephenson. Modification of equipment may not be economically feasible except for larger operations such as that of the Department of Transportation and Communications. However, reduction of damage claims may pay for modifications in many instances, he

Three turf students at Purdue University shared in the $1450 scholarships awarded by the Golf Course Superintendents Association. They are: (l-r) William C. Brazeau, West Lafayette; James W. Uptgraft, Keystone; and Lyle R. Heath, Windfall, all from Indiana. Presentation was made during Midwest Regional Turf Conference at Purdue.

Purdue Turf Students Receive Scholarships

A total of $1450 in scholarships were awarded to three Purdue University students with turf study specialties at the Midwest Regional Turf Conference in March.

Recipients of the Golf Course Superintendents' Association scholarships were William C. Brazeau, 181 Linda Lane, West Lafayette, and James W. Uptgraft, Route 1, Keystone, both seniors, and Lyle R. Heath, Route 1, Windfall, a junior.

Brazeau and Uptgraft each received $500 scholarships and Heath $450.

Elected officers of the Foundation for 1972-73 were Paul Morgan, Brown's Run Country Club, Middletown, Ohio, president; Dudley Smith, Silver Lake Country Club, Orland Park, Ill., vice-president, and W. H. Daniel, Purdue turf specialist, executive secretary (re-elected).

New directors are Walter Wilkie, Muskegon, Mich.; Terry Pfotenhauer, Indianapolis, and William Story, Carmi, Ill.

More than 600 attend the conference, co-sponsored by the Foundation and Purdue's agronomy department.

Adikes Introduces New Adelphi Kentucky Bluegrass

Adelphi Kentucky Bluegrass (P-69), an improved bluegrass developed through controlled parentage breeding, is now being marketed in North America, according to J. & L. Adikes, Inc., Jamaica, N. Y.

The new bluegrass variety will be distributed by five firms. The area east of Montana, Wyoming and Colorado and north of Oklahoma, Arkansas, Tennessee and North Carolina will be covered by Vaughan's Seed Co., Jonathan Green & Sons and J. & L. Adikes, Inc. The rest of the U. S. and European sales will be handled by Northrup, King & Co. Jacklin Seed Co., Inc. will be responsible for Canadian sales.

A characteristic of Adelphi is its natural dark green color. It provides an excellent dense turf because of its good rhizome and tiller development and is moderately low growing. Tests have shown good resistance to leaf spot, crown rot, leaf rust and stripe smut.

It will tolerate moderately close mowing, too.

Adelphi was developed by crossing a variety with desirable characteristics with another variety which showed additional searched for features. By process of elimination, progency that showed any of the weaknesses which might have been in the parent plants were screened and only the choicest plants were used for further testing.

Adikes, Inc. says that a patent has been approved and issued for Adelphi Kentucky Bluegrass. Availability of seed will be in short supply eventhough increased acreage was harvested.

Brooks Instrument Announces Marc VI Turbo-Meter

Brooks Instrument Division, Emerson Electric Company of Statesboro, Ga. has announced a new technical bulletin on a new turbine meter for aircraft refueling.

The Brooks Marc VI Turbo-Meter was designed for use on high capacity refueling truck and carts, and measures flow up to 1250 gpm. It weighs only one-tenth as much as a positive displacement meter of the same capacity.

The bulletin includes information on construction, accuracy, specifications, dimensions, and accessories. For more details, circle (724) on the reply card.

Emergency transplant operations . . .

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Winter kill, fungus and disease can hit the best-kept fine turf areas. Excellent insurance to keep these areas in lush, living grass is a sod nursery for emergency repair. And the best way to perform the transplant operation is with a Ryan Sod Cutter. Ryan has a size and model to suit every need.

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Attachment blades are available for all models for trenching, edging, tilling, pipe laying and subsoil aerification.

Heavy Duty Sod Cutters (2)

. . . for large sod nurseries and big transplanting jobs. These *extra* rugged machines are built to commercial specifications. Five models are available, enabling you to cut up to three acres of sod per day. All models come in a choice of cutting widths from 12″ to 24″. They operate smoothly and quickly with dependable, 2-speed transmissions.

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Keep the tough broadleafs out of your fairways with BANVEL® herbicide

The reputation of your course depends, among other things, upon the condition of your fairways. Broadleaf weeds make for bad lies and frustrated players. They also rob desirable turf of nutrients and moisture it must have to stand up under heavy use.

It may be you've despaired of ever getting rid of the "2,4-D tolerant" weeds. They're the very ones BANVEL 4-S was developed specifically to control . . . and does. Weeds like knotweed, red sorrel, carpetweed, chickweed, white clover, etc. . . . tough, resistant, spreading, thirsty, hungry.

Banvel attacks weeds two ways: one, it attacks through the leaves; two, Banvel is absorbed through the roots. Then Banvel is translocated throughout the plant—even to the deepest roots—to destroy the weed completely.

If you're still plagued by some of the "old favorites" such as dandelion, plantain, knawel, wild garlic and/or onion, burdock, etc., along with the real tough ones mentioned above,

Banvel+2,4-D combination is unbeatable for broad-spectrum control without setback to established turf and rhizome development.

CHLORDANE . . . AMERICA'S LEADING TURF INSECTICIDE FOR BUGS WITH BAD EATING HABITS

Soil insecticides come and go but Chlordane goes on forever. The reasons are clear-cut. Chlordane kills most common insect pests of turf; also many harmful or annoying insects that live on the surface: White grubs, Japanese beetle larvae, mole crickets, wireworms, ticks, chiggers, cutworms, ants, mosquitoes, sod webworms (lawn moths), earwigs and many others.

Although Chlordane has long-lasting action, *it does not magnify biologically*. Residues have seldom been detected in foods, water, fish, or wildlife. When detected, they have been insignificant.

Chlordane can be applied with standard equipment, in either liquid or dry form. Exact rates and directions for application appear on package labels.

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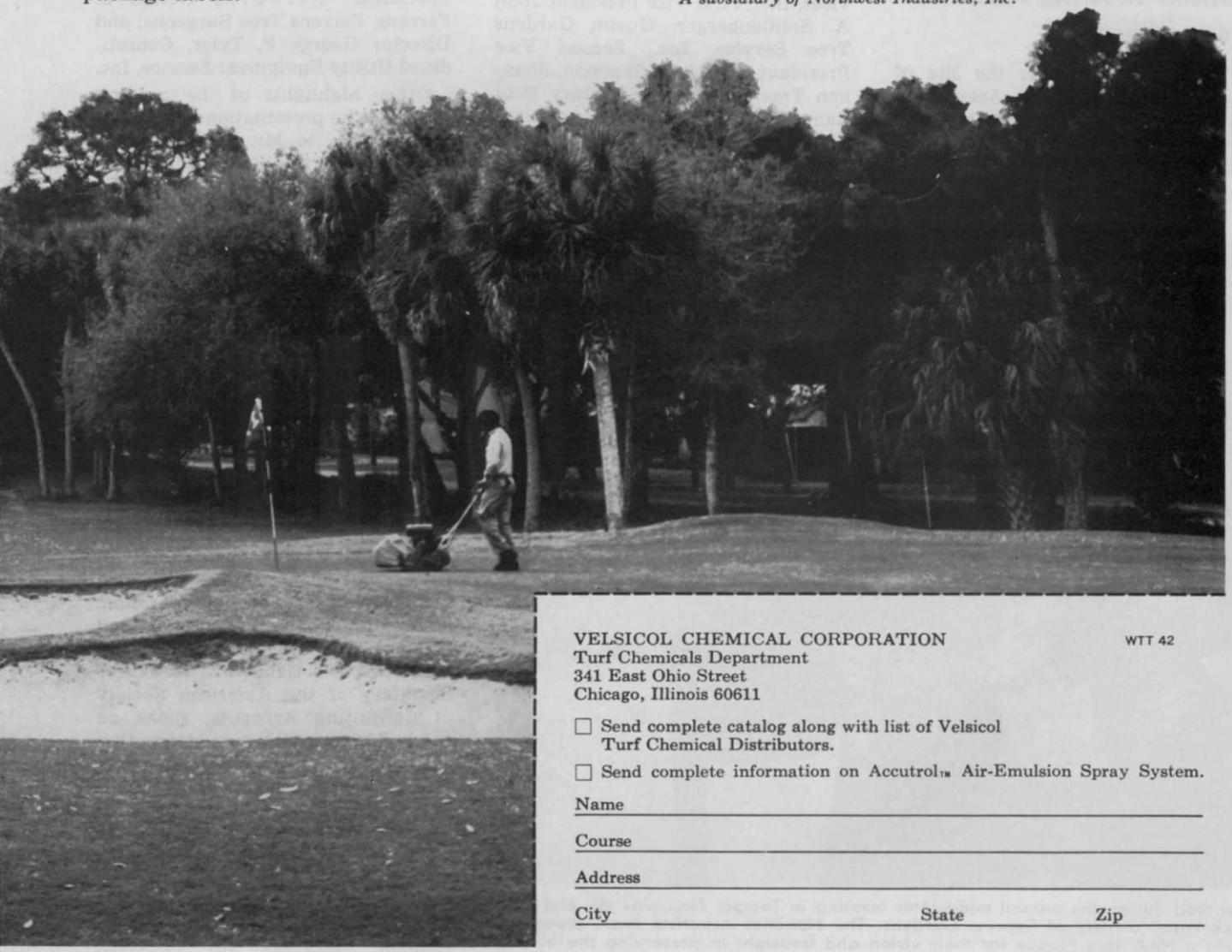

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National Arborists Assn. Elects Officers

Tampa, Florida, was the site of the National Arborist Association (NAA) 1972 Annual Meeting and Trade Show in February. More than 125 delegates attended.

New officers for 1972 include President Robert Felix, Harder Services, Inc.; First Vice President John A. Shullenbarger, Gustin Gardens Tree Service, Inc.; Second Vice President W. Roland Shannon, Shannon Tree Company; Secretary Paul Ramsey, N. G. Gilbert Corporation; Treasurer Thomas A. Morrison, H. A. Morrison, Arborist; Director Boyd Haney, B. Haney & Sons; Director Kenneth B. Kirk, Shield Shade Tree Specialists; Director Gerald E. Farrens, Farrens Tree Surgeons; and Director George P. Tyler, Consolidated Utility Equipment Service, Inc.

Honored during the annual mid-winter meeting in Tampa, Fla., was Mr. and Mrs. Dick Pope, owners of Cypress Gardens. The National Arborists Assn. presented them a NAA Tree Plaque for their vision and foresight in preserving the beauty of a well-known Banyan Tree. Pictured here are: (l-r) William Lanphear, president of NAA; John Duling, past president; Mr. and Mrs. Dick Pope; William Rae, past president; and John Shullenbarger, vice president.

Other highlights of the meeting included the presentation of an NAA Tree Plaque to Mr. Richard Pope, Chairman of the Board of Florida Cypress Gardens, Inc., for the preservation of the largest specimen Banyan tree found in Central Florida.

Jack Hoffer spoke to the members on the effects Phase II wage and price controls will have on commercial tree care firms. Other topics discussed were capitalization costs, payroll taxes, price increases for service organizations, and many other important subjects. Paul Ramsey, N. G. Gilbert Corporation and George Barlow, Area Compliance Officer, Jacksonville, Florida, presented a program on the Occupational Safety and Health Act of 1970. Some of the topics discussed included: Inspections (preparation, notification, and procedures) and Citations, Penalties and Shutdowns.

Dr. Spencer Davis, Jr., Executive Secretary of the American Society of Consulting Arborists, spoke on the pollution and injury effects that salt has on trees. He related the effects that salt has on the physiology of a tree and some of the preventative measures that may be used to protect the tree from destruction.

The next Annual Meeting of the National Arborist Association is tentatively scheduled for February 18-22, 1973 at the Mountain Shadows, Scottsdale, Arizona.

Scientists Advocate Nuclear Power To Conserve Energy Drain

Energy — the unseen power that provides everything from food and shelter to the luxuries of mechanized living — may pose a major ecological problem for man. Modern industry, transportation, and agriculture are almost totally dependent on the stored solar energy found in fossil fuels. But coal, petroleum and natural gas will soon be in short supply.

These are some of the conclusions developed by two Ohio scientists, Dr. Warren L. Roller, professor of agricultural engineering at the Ohio Agricultural Research and Development Center, Wooster, and Dr. Walter Carey, director of the Nuclear Reacter Laboratory at Ohio State University.

"We are the stewards of these energy capital assets," Roller said. "Yet we contnue to withdraw from our account as if there were no tomorrow . . . living off resources that belong to future generations."

He said that three-fourths of the fossil fuel energy consumed by transportation goes down the energy drain. Efficiency of fossil fuels to generate electricity is poor.

We must develop the full potential of nuclear power, said Dr. Carey. When uranium is split in the fission reaction, energy in the form of heat is liberated — three million times more energy than in an equivalent weight of coal.

But radiation dangers and thermal pollution have created controversy. "We have lost sight of a basic principle about nuclear power," Carey submits.

"The nuclear reactor was never meant to be the ultimate answer to our energy needs. It was originally conceived as a temporary source of power that would extend our limited resources until we learned to directly harness the sun's energy."

The scientist said that technology is now available to minimize or eliminate the impact of nuclear plants on the environment.

What do the scientists predict as tomorrow's energy source? The sun, says Carey. Solar cells have already been developed to capture the sun's rays, but as yet there is no practical way to store solar energy.

The researcher described one suggested plan which may become part of the new solar technology.

Huge plates of solar cells would orbit in continual sunlight high above the earth. Solar energy would be captured, converted into microwaves, and beamed—even through cloud cover—to receivers on the ground or floating in the sea. The microwaves would then be converted into various forms.

"The idea isn't nearly as far fetched as it might sound," Carey said. In fact, scientists in the space program have already taken the first step toward such advanced technology.

Carey and Roller pointed out that we must correct the misuse of our limited stored energy reserves. Increasing our energy use efficiency may involve some sweeping change in outlook, and even in eating habits, they said.

Protein, as well as energy, is essential in our food supply. Forests and other dense vegetative crops are most efficient at capturing solar radiation and turning it into organic material.

Yeasts and certain other lower life forms are much more efficient at converting this organic material to protein than are some of our domestic animals. This means, Roller said, we may be forced to substitute these more efficient processes for our present feed grain to meat pathways.

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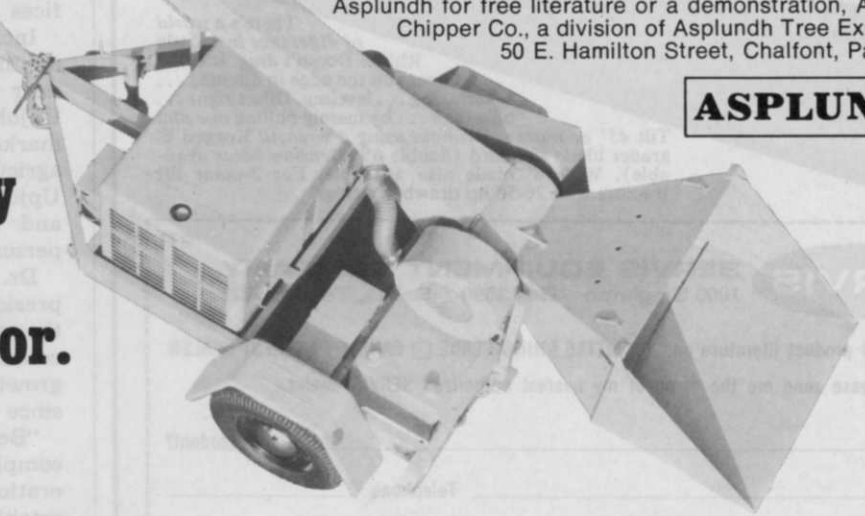

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Ecology Manipulation Suggested for Sod Fields

The most successful control of annual weeds in commercial sod fields, comes from manipulating the microecology, according to Dr. James V. Parochetti, Extension weed control specialist at the University of Maryland.

Proper mowing and control of turf diseases and problem insects are the key elements in producing vigorous turf growth which will do its own job of controlling weeds with little or no need for application of herbicides, he said during the Maryland Sod Conference in March.

He granted that herbicide application is often necessary, however, especially for the control of cool-season perennial grassy weeds, such as quackgrass, which make most of their growth in spring and fall when lawn grasses may not be actively growing.

The Maryland agronomist cited one herbicide application rule-of-thumb. "When the forsythia blooms drop, it's time to apply dacthal for crabgrass control."

He reminded nearly 100 persons attending the conference of the necessity of eliminating perennial weeds prior to establishment of a sod field.

Dalapon was listed as a good herbicide for controlling grassy perennial weeds, and dicamba plus 2,4-D was recommended for post-emergent applications to hold broadleaved perennial weeds in check.

New Headquarters Building To House Upjohn Ag Division

The Upjohn Company Agricultural Division will be consolidated under a single roof when new offices are completed in April.

Included in the move to the new facilities at Upjohn's research farm near Kalamazoo, Mich. will be the Upjohn and Tuco animal products marketing and research areas, Tuco agricultural chemicals marketing, Upjohn's Asgrow Seed Company, and certain other administrative personnel.

Dr. David A. Phillipson, vice-president and general manager of the agricultural division, said the consolidation reflects the rapid growth the division has experienced since its formation in 1964.

"Because of the increased size and complexity of our agricultural operations, there's a need for us to establish a single, more efficient base of operations," Dr. Phillipson said.

Brush In Central Texas Controlled With Tandex

Tandex karbutilate herbicide, applied as a 10% granular or 60% tablet formulation, has been found to be effective in controlling troublesome brush species such as mesquite, persimmon, prickly ash, chittum, sumac and pecan on non-crop land in central Texas.

Leo Miles, product manager for FMC Corporation's Niagara Chemical Division in Middleport, New York, says that basal (spot) applications of Tandex offer an economical, conveninent and effective means of controlling undesirable woody plants without the use of water, oil or spraying equipment.

Granular formations are of particular interest in areas that are inaccesible to vehicles and application equipment since they lend themselves to hand application, with less material to carry to the site.

A urea-carbamate soil sterilant herbicide, Tandex is characterized by a broad spectrum of herbicidal activity. New registrations extending its use as a brush control agent were granted by the Environmental Protection Agency earlier this year.

It is also registered for control of annual and perennial weeds and grasses and other hard-to-kill species on non-crop land, such as utility and railroad right-of-ways, industrial sites, pipe lines and drainage ditches.

Herbicidal activity is attained through absorption by the plant root system.

SAFO Markets Spreader Sticker

A surfactant under the trade name of Magi-matic is now being produced and marketed by Safco Manufacturing, Inc. of Waco, Texas.

The product has been used in the Southwest and Southeast for several years. Safco plans to market it nationwide because of its adaptability to other areas where agricultural chemicals are used.

Safco Magi-matic surfactant is a water soluble spray additive which increases absorption, aids translocation and sticking of agricultural chemicals to plant surfaces. The manufacturer says that it provides uniform distribution of spray droplets, penetrates waxy coverings of hard to wet plants and increases weathering.

For more details, circle (720) on the reader reply card.

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FERTILITY *(from page 26)*

will continue to grow, taking up nutrients and moisture from the soil. These are translocated through the plant and the following spring, properly fertilized plants make better growth than other plants fertilized the conventional way.

Of all the elements involved in Year-Round Fertility, nitrogen seems to be the key. Many plants absorb most of their nitrogen in the form of nitrates. Even when ammonium fertilizers are applied to agricultural soils, much of the absorption of nitrogen by plant occurs in the form of nitrates. Generally, the fertilizer carrier is not important, as long as the proper amount of nitrates is present when the plant needs nitrogen.

So. Dr. Schramm undertook research to compare ammonium nitrate and Uramite ureaform fertilizers for differences in nitrogen availability. He found (Figure 1) that foliage color, density of foliage, number of flowers, and time of flower opening on azalea test plants were significantly improved from the use of Uramite, as compared with plants treated with ammonium nitrate. The slower release of nitrogen

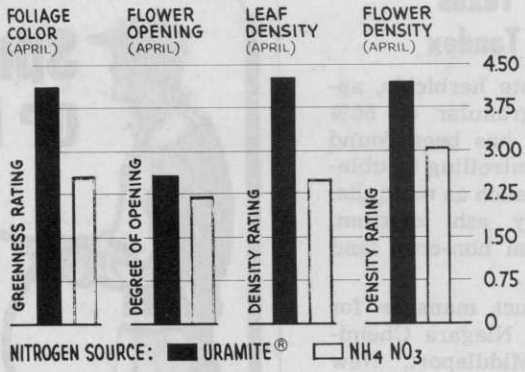

Figure 1. A comparison of the growth and development of Azalea var. Hinodegiri plants treated with Uramite ureaform and ammonium nitrate sources of nitrogen.

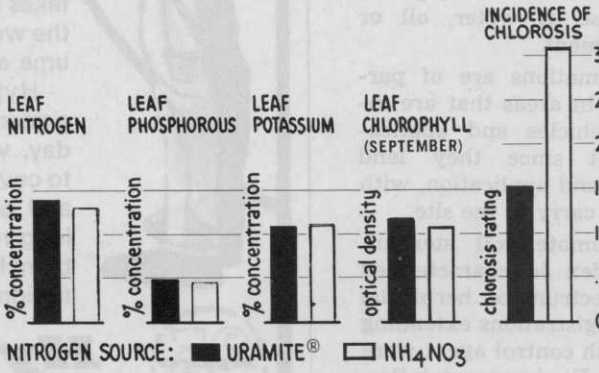

Figure 2. A comparison of the tissue analysis of Azalea var. Hinodegiri plants treated with Uramite ureaform and ammonium nitrate sources of nitrogen.

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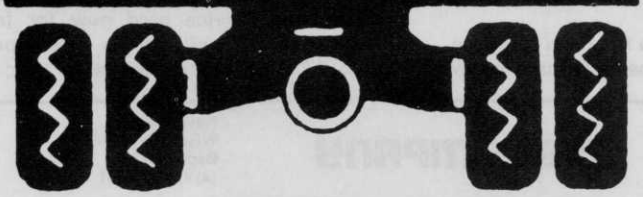

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by Uramite allows nitrogen to be taken up over an extended period of time by the plant.

Other measures of plant performance also demonstrated that Uramite improved the general appearance of various plants. For this ureaform nitrogen source produces a significantly higher level of leaf nitrogen and leaf calcium, without any observable chlorosis (Figure 2). No differences were observed in leaf potassium and magnesium; but with continued use of ureaform nitrogen there is a striking increase in late season greenness as shown by leaf chlorophyl content.

Another aspect of a Year-Round Fertility program involves frequency of application. The use of Uramite reduces the number of nitrogen applications necessary in the nursery and this helps to reduce labor requirements. Ammonium nitrate, for example, to produce comparable growth must be applied at frequent intervals to supply the necessary nitrogen. On the other hand, Uramite need be applied only once or twice a year.

Organic materials containing nitrogen were also compared with these two sources of commercial nitrogen. In all cases, the organic materials released the nitrogen too slowly to maintain maximum plant growth.

Scheduling for Year-Round Fertility is indicated by a program started in 1970 at Johnson's Nursery in Fairfield, Conn. Here Kenneth Johnson first adjusted nutrient levels based on an initial soil test. He then planned applications of Uramite ureaform fertilizer on a semi-annual schedule. His program for the first full year was as follows:

Feb.	Apply combination of	
	(a) Dolomitic limestone	2000#A
	(b) Uramite	395#/A
	(c) Superphosphate	1000#/A
	(d) Potassium Sulphate	400#/A
	(e) Complete minor elements	120#/A
Mar.	Apply 10-10-10	480#/A
June	Apply 10-10-10	480#/A
Sept.	Apply 10-10-10	480#/A
Oct.	Apply Uramite	395#/A
Dec.	Apply 10-10-10	480#/A

(continued on next page)

Lateral branching on Canadian Hemlock is measured by nurseryman Kenneth Johnson in Fairfield, Conn. nursery. Graceful pendulous branch is characteristic of this tree which has benefited from two annual treatments with Uramite under Year-Round Fertility tests.

NEW FROM ALLIS-CHALMERS

THE 616

Not quite a lawn tractor
Not quite a farm tractor

But quite a tractor!

Full-muscled as a small agricultural tractor . . . safe and maneuverable as a lawn and garden tractor. The all-new 16½ hp 616 tractor from Allis-Chalmers offers the best of both for just about any in-between job you can name. Features galore with hydrostatic drive, electric PTO and optional three point hitch. It's a small wonder for small acreage farming . . . sod farms . . . seed bed preparation and cultivation . . . large area mowing . . . contract lawn care . . . landscaping . . . snow removal. There's a complete lineup of accessories available from mower to plow . . . fork lift to front end loader . . . and more. See the 616 . . . try the 616 at your Allis-Chalmers dealer. It's quite a tractor.

ALLIS-CHALMERS
OUTDOOR & LEISURE PRODUCTS
Box 512, Milwaukee, WI 53201

For More Details Circle (131) on Reply Card

Feb. Take soil test and adjust nutrient levels if necessary.

The Johnson program was repeated in 1971, and it is now being carried into its third year. Enthusiasm for the program was noted in a September, 1971 field day at the Johnson nursery in Fairfield when Connecticut nurserymen viewed plants which had been under the program for two years. Nurserymen were impressed with the uniformity and quality of nearly all species being grown. This included rhododendrons, azaleas, maple, birch, dogwood, mountain andromeda, juniper, hemlock, pines and numerous other shrubs and trees.

A year earlier the Johnsons had reported "we have been careful to make all applications on schedule. We find foliage looks better, the stock looks better and we had outstanding growth in a number of species."

Now at the 1971 field day the Johnsons said improved plant growth increased the market value of the plants and more than justified the added cost of the Year-Round Fertility program.

A poll of the nurserymen confirmed the Johnson analysis and by this spring a total of six nurseries will be on the program in Connecticut.

Much of the early Connecticut field test work for this Year-Round Fertility program was carried on at the Pachaug State Forest Nursery in Voluntown in cooperation with nurseryman, Clarence "Pete" Merrill. Here, Dr. Schramm confirmed winter hardiness of plants. Comparisons were made between the conventional application of fertilizers and the Year-Round Fertility program.

The tests included such species as white pine, white spruce, Norway spruce, Black Hills spruce, Canadian Hemlock, Douglas Fir and European Larch. Fig. 3 shows results of Year-Round fertilization after only one season's testing on three year old (3-0) forest tree seedlings.

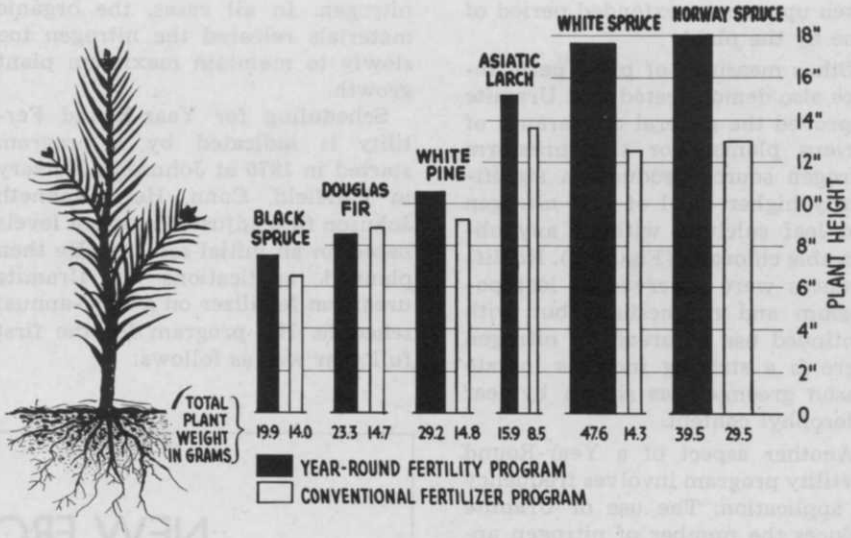

Figure 3. Growth of 3-O year forest tree seedlings under Year-Round and conventional fertilizer programs. Averages of 60 plants per species.

One small problem that has been observed is the increase in the number of weeds in the nursery. *(See "Chemical Weed Control Cuts Labor Costs In Half," WTT, March 1972)* Dr. Schramm's fertility concept really makes everything grow. Growers must plan to take care of this problem when they decide to adopt the Year-Round Fertility concept.

The question of economics is often raised about a program such as this. The Johnsons report that with close plantings and narrow rows and multiple applications the cost of fertilizer applications, extra labor for weed control, and other related expenses can average up to $500 per acre. Other nurseries expect lower costs. Despite the added cost, however, the increased value of the stock is realized through a reduction in winter damage, increased growth, and the improvement in quality.

What's the next step in Year-Round Fertility? Dr. Schramm believes more northeastern nurserymen will be switching to this new concept. He also sees builders, developers, and others following the lead of the first Connecticut nurseries. Top quality ornamentals are therefore in prospect and down the road is the hope that added study will establish the point that healthy plants offer greater resistance to disease and to insects, as well as to air pollution. There is much to be done to take advantage of Dr. Schramm's pioneering work. Progressive nurserymen can be expected to be beating a path to his door as they step up their efforts to improve profitability without increasing nursery acreage or the number of plants being maintained.

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One man with a Billy Goat becomes a big clean-up crew. Original machine BG60 is available in self-propelled (P) and push (A) models, with gasoline or propane engine, battery or electric with cord. For all models—optional intake hose for hard to reach areas.

Model	HP	Snout width	Blower housing	Application
BG60	8	30"	Steel	Industrial
BT70	8	30"	Steel	Grounds, parks
KD50	5	26"	Steel	Lawns, drives
KD35	3½	26"	Steel	Lawns, drives

BILLY GOAT
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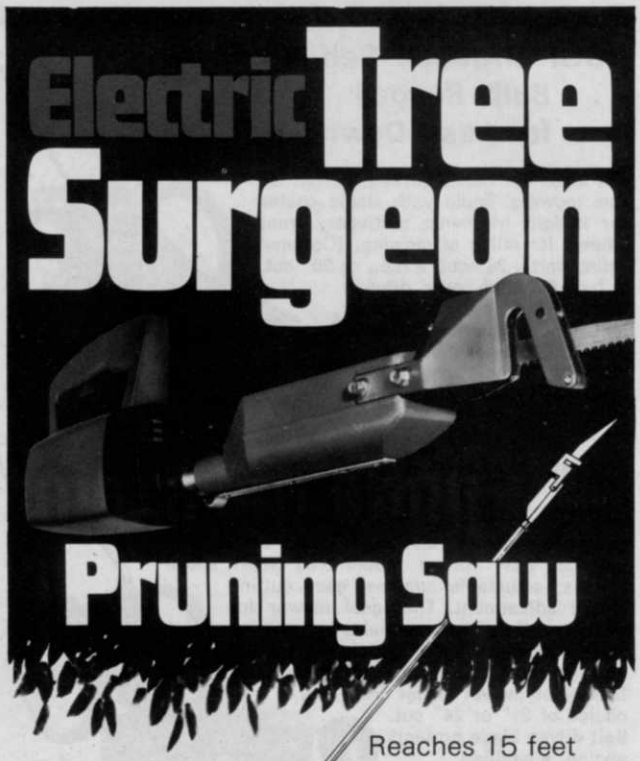
Fertility contrast is seen in two-year-old white pine seedlings at Pachaug State Forest Nursery, Voluntown, Conn. Larger seedlings in foreground (dark area) have been under Year-Round Fertility; lighter colored, smaller seedlings in rear have received conventional fertilizer treatments.

Two-year-old white pine seedlings are examined by Dr. Robert J Schramm, Jr. and Clarence "Pete" Merrill at Pachaug State Forest Nursery, Voluntown, Conn. They are looking for second growth lateral bud break in these seedlings, studied under Year-Round Fertility tests.



Reaches 15 feet to prune and cut clean without injury to bark. Easy way to prune for orchards, nurseries, parks, golf courses, estates, homes ...for all landscapers.

The only REMOTE CONTROL reciprocating electric pruning saw on the market. Designed with the professional and amateur in mind. Time and money savings will reflect in increased profits.

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The World's largest selling one man gas engine hole digger. For post setting, tree root fertilizing, tree planting, ice fishing, blasting, and soil testing. Drills holes 1-5/8" to 9" in diameter and 30" to 45" deep.

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Tilt blade for heavy cutting, flatten for fine mowing. Equip with single caster for in-tight trimming; stationary front wheels for miles of mowing. (Optional riding cart). 24" cut, 5 h.p., or 26" cut, 7 h.p. Oil bath gear drive, blade clutch, cutting height adjustment, grass catcher extend usefulness and productivity. Roof Ranger self-propelled is the authority on hills, peaks, slopes, valleys.

ROOF "400" Pushes Easier, Lasts Longer

Sturdy Roof "400" can cut dense 18" growth; can mow lawns smooth. Fine balance, easy rolling rubber-tired steel spoke wheels, adjustable handles, easy cutting height adjustment. The ideal mower for **all** heavy-duty commercial-type mowing and trimming. Blade clutch for easier starting the 5 h.p. engine, choice of stationary or swivel caster front end, choice of 21" or 24" cut. Belt driven blade protects engine, simplifies maintenance.

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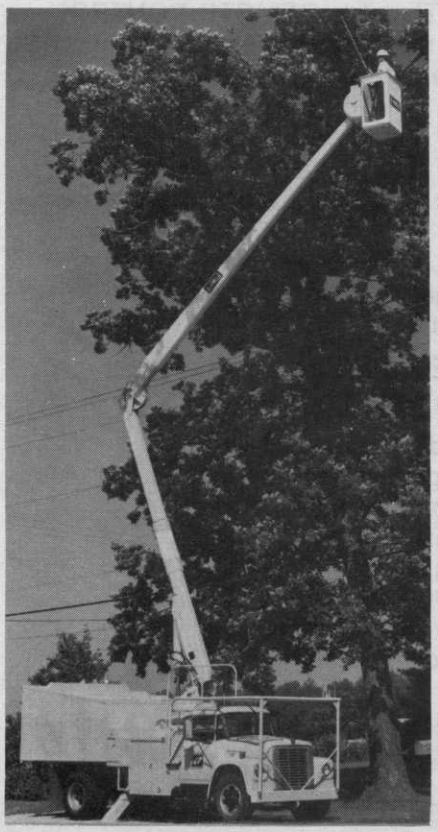

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industry people on the move

Ralph R. Sjoberg, named manager of standards engineering for Koehring, Milwaukee, Wisc. Responsibilities include corporatewide dimensional specifications and standards for products, Valve Analysis as well as with programs in manufacturing and purchasing cost reduction where engineering design standards are affected.

* * *

Russell H. Stark, appointed supervisor, dealer sales for Normarc, Inc., Tangent, Oregon. Will head up all dealer sales for Oregon and Idaho operations of Normarc which includes Union Seed Company, Nampa, Idaho.

* * *

Jean P. Cartier to Northeastern regional manager for Union Carbide Agricultural Products & Services. Formerly Western regional manager, his duties now include coordinating the company's efforts with state, Federal and local governmental agencies in control programs for gypsy moth.

* * *

Jim Dowell appointed general sales manager of FMC Corporation Side-Winder machinery line. He has served as divisional and regional sales manager for Side-Winder.

* * *

Dr. Thomas R. Hopkins, elected president of Gulf Research & Development Company, a subsidiary of Gulf Oil Corporation. He succeeds **R. J. Metcalf** who is retiring.

* * *

George S. Appleton, from general manager to vice-president and general manager of Abbott Laboratories' Agricultural and Veterinary Products Division, North Chicago, Ill.

* * *

Phil Baker becomes field representative of the JB Sod & Seed Company of Salem, Oregon. He will work in the Puget Sound area of Washington.

* * *

Thomas R. Loy, appointed manager, marketing research, agricultural for Velsicol Chemical Corporation. He will continue in his present position as manager, market development, agricultural.

* * *

Hugh M. Lynn, named product manager of Thompson-Hayward Chemical Company's pest control chemicals for the agricultural chemical division. He will direct and coordinate pest control product sales throughout the U.S.

* * *

John F. Sexton to national sales manager of Agrico turf and garden products, Agrico Chemical Company. He was president of John Sexton & Associates, marketing consultants, Columbus, Ohio.

* * *

Roderick C. Gaskell selected for a one year internship program with the Indiana Department of Parks and Recreation. He is a graduate of the University of Conn. with a degree in forest recreation. Program is jointly sponsored by the National Recreation and Parks Assoc. and the Indianapolis Department of Parks and Recreation. He will be working in the areas of regional park management, urban park maintenance, forestry, golf course management, finance and others.

MULTI-PURPOSE TRACTOR: Allis-Chalmers Corporation, Milwaukee, Wisc.

The work capacity gap between the lawn and garden and the agricultural tractor is now filled with this 616 model. It has a 16½ hp engine to power it for a variety of uses including large area mowing, contract lawn care, roadside mowing, seedbed preparation and other tasks. Overall dimensions are 83 inches long, 56 inches wide and 48 inches tall. Independent PTO drive is controlled by an electric clutch operated by a toggle switch on the instrument panel. Many features found on larger tractors are standard. For more details, circle (701) on the reply card.

TRAP TENDER: Skaggs Turf Equipment Co., Canfield, Ohio

Relax while you work in this easy-to-maintain unit. It features a short wheel base, low center of gravity, short turning radius and one piece fiberglass body. Rakes are 72 inches wide and adjustable in three independent sections. Thirty-three teeth scarify the trap. Drag plates give smooth finish. Unit is 65 inches long, 48 inches wide and 28 inches tall. The speed range is variable up to six mph. For more details, circle (702) on the reply card.

TRIMEC BENTGRASS BROADLEAF HERBICIDE: PBI-Gordon Corporation, Kansas City, Kans.

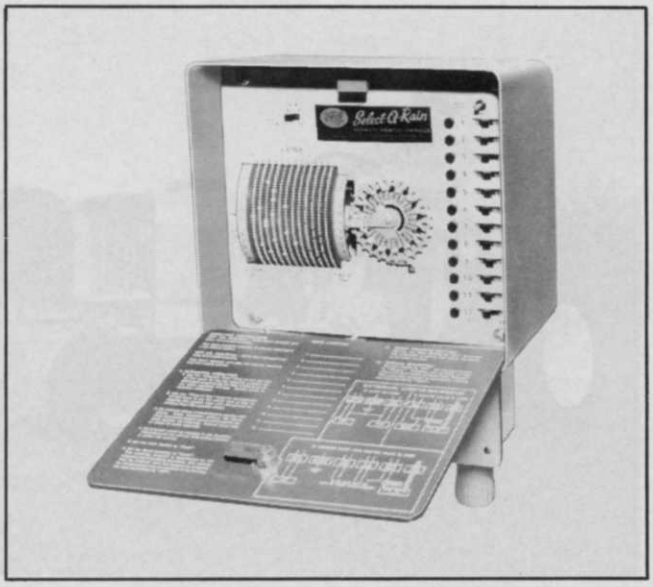
Control nearly all broadleaf weeds in Bentgrass and other 2,4-D sensitive grasses with this new herbicide. It contains Trimec concentrate, a mixture of 2,4-D, MCP and Dicamba. The three compounds perform more effectively than when applied separately, and with less material. It has no objectionable odor. Cool season control of hard-to-kill weeds is excellent and it keeps working through the warm season or in warm climates. For more details, circle (703) on the reply card.

FLEXIBLE ROTARY MOWER: BMB Company, Inc., Holton, Kans.

A 15 foot flexible rotary mower that cuts a full 180-inch swath is now introduced. Hinged wings float over rough terrain and follow contours easily. Each wing cuts a 60-inch swath while the center unit has a 72-inch cutting width. Wings can be operated at approximately 45 degrees up and 24 degrees down, and fold up, locking in place for travel. Unit uses manual or full hydraulic power. Wing gear boxes are 85 hp, the center gear box is 120 hp, and all three gear boxes have sheer pins. Directional baffles are standard. Many options can be included. For more details, circle (704) on the reply card.

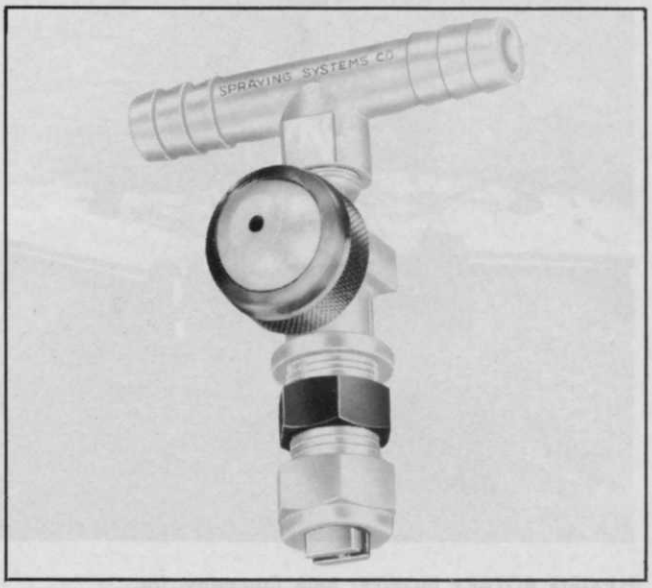
HEAVY DUTY MOWER, Roof Manufacturing Company, Pontiac, Ill.

Here's a push-type mower for the commercial market. Commercial "21" is built of 7-gauge welded steel frame and 12-gauge rolled steel cutting housing to extend the useful life. The model is available with 3½ hp or 5 hp engine and a 5 quart fuel tank for longer, stronger runs. For more details, circle (705) on the reply card.



SELECT-O-RAIN: Hays Mfg. Div., Zurn Industries, Inc.

This 12 zone automatic controller for watering and irrigation features a patented drum programmer. The electromechanical timing and programming device incorporates sliding actuators to select the operation of any zone for any length of time, independent of any other zone. Can be programmed for 24 hour, 14 day operation with independent control of the AM and PM hours. Other items to be programmed into the controller are timing intervals, total watering cycle duration, time relays. Has a rain switch, circuit breaker, individual zone light and UL listed components. Wall or pedestal mounted. For more details, circle (706) on the reply card.

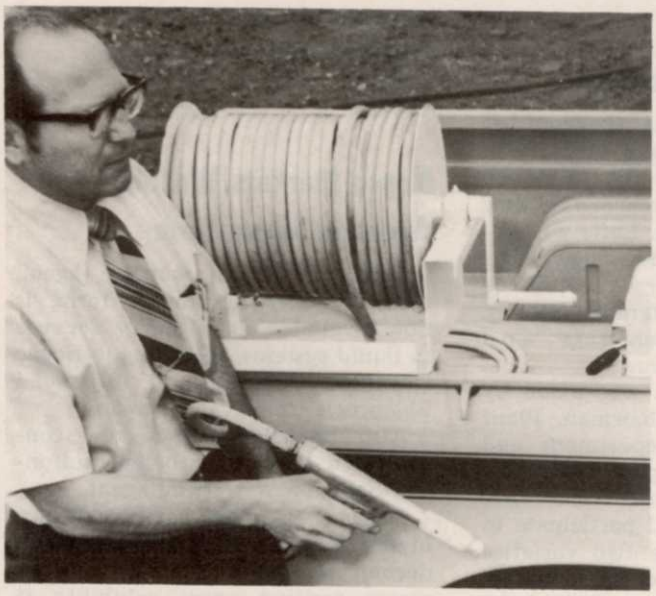


HOSE SHANK TEEJET NOZZLE: Spraying Systems Co., Wheaton, Ill.

This nozzle is designed with interchangeable spray tips for spraying herbicides and insecticides. Each nozzle includes a built-in diaphragm shut-off valve to provide quick and positive shut-off. Hose shanks, nozzle body and cap are made of nylon, as well as the diaphragm shut-off valve assembly. Hose shanks are supplied in two connection sizes for use with ⅜ inch or ½ inch ID hose. For more details, circle (707) on the reply card.

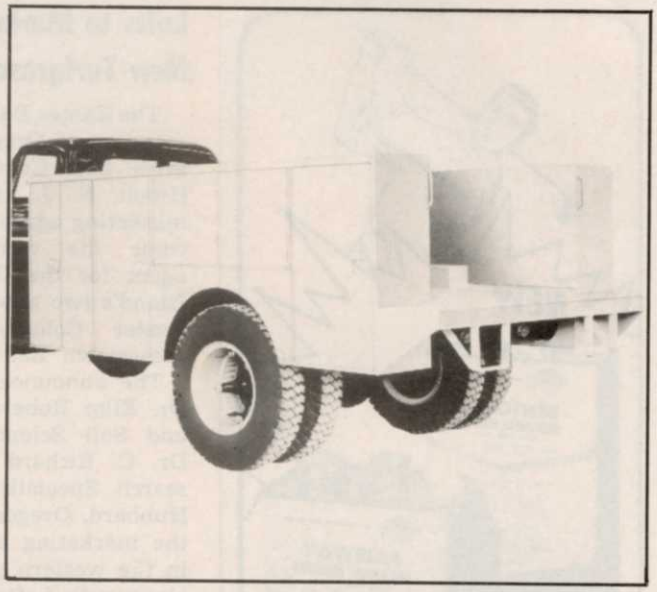
VPC STUMP CUTTER: Valley Products Corporation, Valley, Neb.

Stump removal is now economical with this new stump cutter designed to meet the special needs of municipalities, parks, cemeteries, utilities, landscapers, tree surgeons and service firms. Model 5 weighs 145 pounds and is only 29 inches wide. It can be easily loaded into the back of a station wagon or truck for fast transport. Powered by an 8 hp engine, it can remove an 8 inch hardwood stump to 8 inches below ground in 3 minutes. For more details, circle (708) on the reply card.



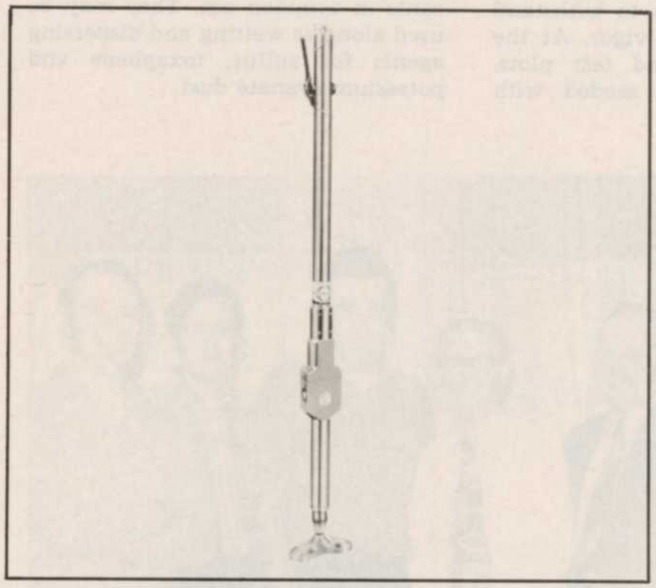
CURB-SIDE HOSE REEL: John Bean Division, FMC Corporation, San Jose, Calif.

Mount this curb-side hose heel to any pickup truck bed side. It holds up to 200 feet of ⅜ inch hose. Equipped with an automatic drag to prevent hose overspin during use. The unit contains an easily-operated positive lock for traveling. Bearings on the reel are made of heavy-duty bronze. The inner drum is designed to accommodate hose expansion under pressure. For more details, circle (709) on reply card.



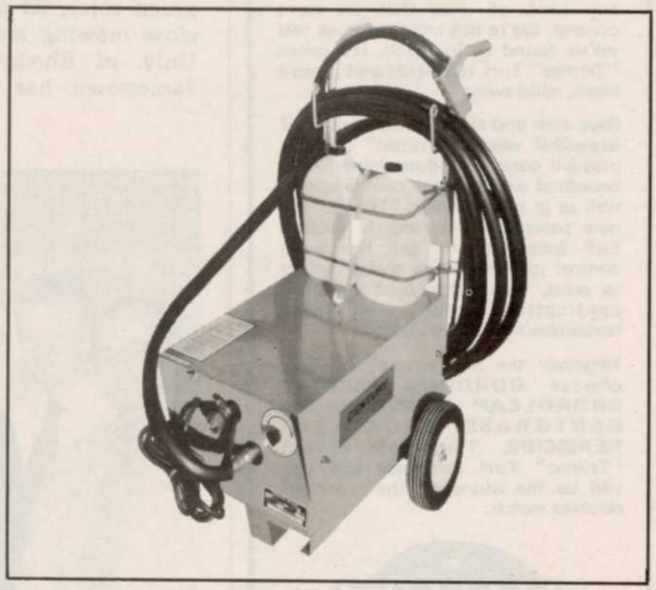
LINE BODIES, Knapheide Manufacturing Company, Quincy, Ill.

The H Series line of utility bodies for line construction and maintenance use range in length from 108 inches to 169 inches. They are built to fit standard truck chassis with cab to axle lengths varying from 60 inches to 124 inches. Two basic styles. The H model have a vertical compartment behind the wheelhousing. The BH model is designed without the rear compartment to shorten the overhang behind the rear axle and balance load conditions. Construction features include 14 gauge side compartment shells, 3/16 inch treadplate floors, weatherproof doors. For more details, circle (710) on the reply card.



VALVE-IN-HANDLE TAMPER: Ackley Manufacturing Co., Clackamas, Ore.

Weighing only 25 pounds, this tamper features valve-in-handle on-off control. Provides the operator with complete control of the unit at the point of use. Unit delivers up to 1,600 full 3 inch strokes per minute operating at 2,000 psi and 10 gpm. Available with 2, 3 and 5 foot handle lengths. Three standard tamper shoes are available: kidney-shaped, round and rectangular. A ground rod driver accessory delivers enough drive for the longest ground rods in the toughest soils. For more details, circle (711) on reply card.



HIGH-LOW PRESSURE WASHER: Century Engineering Corp., Cedar Rapids, Iowa

The HPW-3D is a new three gallon per minute, high-low pressure washer that has the extra volume needed for flushing areas with heavy accumulations of material. Features handgun control from as far as 30 feet. The four-nozzle turret head on the handgun makes proper nozzle selection simple for every job. Nozzle selection includes 0 degree for blasting, 15 degrees for general purpose use, 40 degrees for large areas, or low pressure for applying cleaning materials. For more details, circle (712) on the reply card.

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We haven't found a broadleaf weed in any kind of grass that we can't control. We're still trying, but we feel we've found their match. It's called "Trimec" Turf Herbicide and it has a clean, solid swing.

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Whatever the lie, fairway or green, choose **GORDON'S FAIRWAY BROADLEAF HERBICIDE** and **BENTGRASS BROADLEAF HERBICIDE**. They both contain "Trimec" Turf Herbicide and you will be the winner of the broadleaf doubles match.

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Lofts to Market New Turfgrass Varieties

The Exeter Bentgrass Growers Association of Oregon and Lofts Pedigreed Seed Company Inc. of Bound Brook, N. J. have reached a new marketing agreement. Lofts will become the world-wide marketing agent for the University of Rhode Island's two new turfgrass varieties, Exeter Colonial Bentgrass and Jamestown Red Fescue.

The announcement was made by Dr. Eliot Roberts, Chairman, Plant and Soil Science Department and Dr. C. Richard Skogley, Turf Research Specialist. Turf Seeds Inc., Hubbard, Oregon will participate in the marketing of the two varieties in the western part of the country, along with Lofts' Stover Seed Company Division, which will handle the Southern California (Los Angeles) area. Pick Seed of Richmond Hill, Canada, will market both varieties in Canada.

Exeter Colonial Bentgrass is an improved variety of Colonial Bentgrass and is used primarily on tees, fairways and aprons, as well as high quality lawns.

Jamestown Red Fescue is an improved chewings type fescue which has been under test for the last 10 years at many universities. It is characterized by its extreme dark green color, its ability to withstand close mowing and its vigor. At the Univ. of Rhode Island test plots, Jamestown has been seeded with Colonial Bentgrass and has thrived at one-quarter inch mowing.

Exeter and Jamestown will be available only as certified seed.

Nopco Markets Wetting Agent in Slurry Form

Sellogen HR-90 wetting agent, formerly only in powder form, is now available as a slurry for use in liquid systems, according to Nopco Chemical Division of Diamond Shamrock Chemical Company.

Also introduced is a new concentrated alkyl naphthalene sulfonate, Sellogen W wetting agent.

Nopco says these compounds are highly tolerant of conditions which decompose other anionics or decrease wetting agent solubility if non-ionics are used. They remain stable in solutions containing high concentrations of electrolytes. Highly ionized or caustic solutions do not adversely affect, and in some cases greatly improve, the performance of the Sellogen wetting agents.

Sellogen HR and Sellogen W can be used with wettable powder based agricultural chemicals such as chlorinated hydrocarbon, phosphate and carbamate insecticides. When used with Lomar dispersants, they are compatible with agricultural toxicants in common use. They may be used alone as wetting and dispersing agents for sulfur, toxaphene and potassium cyanate dust.

Two new turfgrass varieties developed by the University of Rhode Island are now available. Meeting to discuss market and sales plans are: (l-r) Dr. C. R. Skogley, professor of agronomy, plant and soil science, U. of R. I.; John Morrissey, vice president and general manager, Chanderlin Seed Company; Dr. Eliot Roberts, professor and chairman, plant and soil science, U. of R. I.; Selmer Loft, chairman of the board, Lofts Seed Company; Bill Rose, president, Exeter Bentgrass Growers Assn., Hubbard, Ore.; Jon D. Loft, exec. vice president, Lofts Seed Company; and Peter S. Loft, president, Lofts Seed Company.

Illinois Spray Law Discussed At Conference

Nearly 100 agriculture chemicals and equipment dealers and suppliers, industry representatives and agricultural leaders attended the Southern Illinois Fertilizer and Herbicide Conference in late February. The program was jointly sponsored by regional dealers and the plant industries department of Southern Illinois University, Carbondale. Supplier and dealer exhibits were a part of the conference.

Highlights included: updating Illinois Custom Spray Law regulations, by Juett C. Hogancamp of the Illinois Department of Agriculture's plant industries division; a progress report on the Illinois Pollution Control Board proposals for plant nutrient standards, by John Allin, a board member from Chicago; and some suggestions from an area attorney, Dayton Thomas, on keeping out of trouble in handling and using pesticide chemicals.

Provisions of the 1972 Custom Spray Law in Illinois, first revision since the initial regulations were enacted in 1966, cover uses of four main pesticides and provide for two kinds of licenses—the spray operators license and the spray applicators license. It also requires custom applicators and operators to post a $3,000 performance bond.

Hogancamp noted exceptions to licensing. Exempt from the provisions are: farmers who do their own pesticide spraying as well as for two other persons; power companies and railroads who use their own employees for spraying; certain tree experts spraying trees and shrubs; and pest control operators treating buildings and home sites for insect and rodent pests.

After reviewing briefly the functions of the Illinois Pollution Control Board, Allin presented a progress report on the board's activities toward setting standards for plant nutrient usages in agriculture.

The board, one of three agencies set up under the Illinois Environmental Protection Act, is responsible for setting pollution standards, judging violations, and granting variances.

Allin said the board does not expect to concern itself with regulating pesticides because these are subject to other controls.

Possibilities of negligence suits and credit collections are two areas where dealers, handlers and custom operators dealing with agricultural chemicals can run into difficulties. Suggestions to these people for "keeping out of jail" were provided by Dayton Thomas, a young Shawneetown, Ill., lawyer and assistant state's attorney, an agriculture college graduate who also has been a farmer and salesman of agricultural chemicals.

He said the Illinois Custom Spray Law provisions are not so stringent that competition between dealers and operators will not provide self-policing. The performance bond required for licensed custom spray operators does not cover negligence.

To avoid negligence suits the dealer and his employees must know the product thoroughly, read the container labels carefully and abide by the instructions.

Thomas advised dealers to have adequate insurance to cover possible damages and to seek legal counsel immediately if complaints arise.

Other program discussions included attention to new developments in chemical spray application methods to reduce drift problems and improve coverage for pest control. Ralph Jourdan of Hahn, Inc., Evansville, Indiana, spoke about distribution patterns with flood-type spray nozzles.

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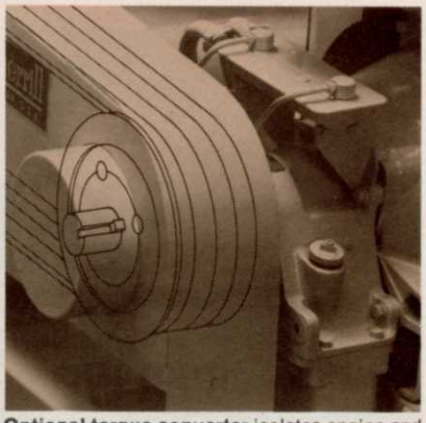
For more than 115 years Mitts & Merrill has been making specialized machinery for industry. A major part of our business is equipment to reduce scrap and waste. This experience is incorporated into design features on our brush chippers that result in higher efficiency and longer, trouble-free service for you. Only Mitts & Merrill brush chippers offer features like these:

Staggered knife pattern for smoother cutting action. Mounted on an all-steel cylinder that, even without an external flywheel, is heaviest in the industry. Each cylinder revolution gives more cuts, produces smaller chips of uniform size. Self-adjusting knives are reversible; give twice the service between sharpening.



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For More Details Circle (120) on Reply Card

Grade Changes Affect Adjacent Tree Growth

Changing grade levels during construction can damage established trees. The injury causes short annual twig growth, smaller and fewer leaves, early leaf drop, leaf scorch and an unhealthy appearance. These characteristics appear gradually and are noticed two or three years after construction.

Gerald E. Draheim, Michigan State University extension horticultural agent, offers these tips on preparing your landscape plans to avoid possible damage to trees you wish to save:

Try to avoid any change in grade level around trees that are to remain. If a change is necessary and fill is needed, provided rock or tile drainge at the original ground level before fill is added.

If the fill needed should be more than one foot deep, build tree wells before excavation begins. Any excavations to lower the grade levels should be started as far from the tree as possible to avoid root damage. Maintain the original grade level near the trunk of the tree.

A 52 page Specialty Valve catalog describing the specifications, performance charts and installation diagrams for more than 250 models of Rain Bird valves is now available. Rain Bird specialty valves are designed to control liquids in all types of pumping plants where regulation of flow, pressure and surges is required. For more details, circle (726) on the reply card.

Cuts twice as fast as most lawn tractors, hugs the ground for hillside safety

NATIONAL 68-inch Triplex

Mows a 68-inch swath at speeds up to 4 miles per hour, a half acre in 15 minutes.

It's a turf-professional type mower, with three powered, free-floating reels that follow ground contour. It shears grass cleanly; doesn't leave unsightly "tip burn" as rotaries often do.

Reduces trimming time because the reels reach out over curbs, up to obstructions and in other hard-to-cut places.

Built to last—with Timken bearings, automotive-type transmission and a lip on the cutter bar to take years of wear.

Do your lawn job in about half the time and do it better with the all-mower mower, the National Triplex.

Other models from 25 to 84-inch cut.

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ACCUTROL *(from page 18)*

cause the air in the air emulsion "expands" the spray mix and replaces part of the water needed for good coverage.

Reports from the field are enthusiastic. Here is what they say:

"When we use the system for ballast work, we estimate that it cuts the amount of water about 20 to 25 percent," says David Mobley, Mobley Company, Inc. Kilgore, Tex. "We also feel our application is more effective. We get better coverage and penetration." He uses Accutrol with MSMA, Banvel and Hyvar X-L with good results.

Bill Crabaugh, systems engineer for Servitron Inc., engineering and maintenance-way representative, Kansas City and Southern Railway, sprays with Accutrol mounted to a high clearance sprayer. He uses Banvel and 2,4-D for vine-type weeds such as red vine, trumpet vine, blueberry and blackberry. On railroad ballast trial work indicated better coverage with Accutrol, says Crabaugh. "We found we could go twice as far with a tankload. Before we went about 20 track miles to a tank load, but with Accutrol, we went 40 track miles."

Heavy droplets penetrate thick brush like this. Accutrol increases chemical action on the plant surface.

Another advantage of the new system is that you can see where you have sprayed. "We had no overlapping," says John Leighton, Eastern Maine Electric, Calais, Maine.

"With conventional application, the applicator would end the tank and tag the brush, load up again and begin six feet back just to make sure coverage was complete. With Accutrol, the spray mix still glistens on the leaves, even though time has elapsed in refilling the tank. It has a different look than conventional spray, and you can definitely see where you have sprayed."

Leighton sprayed about 90 acres with Accutrol in 1971 on distribution rights-of-way. Conservation of spray mix was another feature he liked.

"We went from 400 gallons per acre to 200 gallons per acre," he says. "Part of the difference was the size of trees. With the conventional system in 1970, we were spraying brush that was six to seven feet tall. Last year brush was about half that height. Still I believe we obtained better coverage with fewer gallons of spray mix per acre."

The Accutrol nozzle is simple in design. It consists basically of four parts: nozzle tip, foam generator, flow control disc and strainer, and pipe adapter. The nozzle works much like the aspirator on the kitchen sink faucet. A vacuum is created in the small chamber in the upper end of the nozzle and air is drawn in through small holes. The product is a mixture of air and water, referred to as the air emulsion. The ratio of air to water in the emulsion is about four to one.

The nozzle tip has large holes which permit the air emulsion to pass. Unlike a conventional system, flow is controlled by the flow control disc; pattern is created by the air emulsion itself with no mechanical part to interfere. This means the tip can be used indefinitely without affecting the spray pattern.

Bob Cloud, district superintendent, Harris County Flood Control District, Houston, Tex., cites another advantage that has sold him on Accutrol. "Foam is being generated at the nozzle," he says. "You can pump the Accutrol a long way, whereas with other systems, about

(continued on page 60)

Nozzle Patterns With Accutrol Handguns

LS Nozzle — Long Straight stream

XLSNozzle — Extra Long Straight stream

SS Nozzle — Short Straight stream

F Nozzle — Fan stream

LF Nozzle — Long Fan stream

SOD INDUSTRY SECTION

American Sod Producers Assn. Stages California Sod Blast

The American Sod Producers Association has become a mature, well established, industry oriented organization. Established at Lansing, Mich., only five years ago with a skeleton group of producers, membership is now nationwide, and includes an impressive group of Canadians. The ASPA '72 conference and field day, just concluded at Anaheim, Calif., Feb. 21-24, pulled more than 300 persons, the majority being growers.

Few organizations can boast the educational program put together for this session by Executive Secretray Henry Indyk, Rutgers University. Featured on this program were three of the best known turfgrass plant breeders in the industry: Dr. Victor Younger, University of California, Riverside; Dr. Glenn W. Burton, Georgia Costal Plains Experiment Station, Tifton, Ga.; and Dr. C. Reed Funk, Rutgers, New Brunswick, N. J.

Supplementing their discussions on plant breeding and new varieties were other national leaders in culture and management of cultivated sod. These included Dr. James Beard, Michigan State, East Lansing, Donald Juchartz, Wayne County, Mich., and Tobias Grether, president of the association and of Cal-Turf, Inc., Camarillo, Calif., host to the event.

Dr. Younger reviewed physiology of the sod plant and briefly discussed the problem of moving sod in hot weather. He said this is a difficult situation at best, and suggested good seedbeds and optimum soil management to encourage quick knitting in of newly installed sod. Maybe, he stated, this is the time to also start a disease control program. The obvious out, of course, he said, is to push as many sod sales during the spring and fall months as is possible.

Both growers and guests were treated to a brief history of warm temperature grass development by Dr. Burton. He reminded the group

(continued on page 56)

Tobias Grether

Dr. Henry Indyk

Ralph Daily

Dave Austin

Picture Identification: Tobias Grether, president, Cal-Turf, Inc. Camarillo, Calif. and ASPA Convention host; Dr. Henry Indyk, Rutgers University and ASPA executive-secretary; Ralph Daily, Cal-Turf farm manager; Dave Austin, U.S. Borax; Mel Hansen, Tuco-Upjohn; Sam Besse, west coast representative for Elanco.

Mel Hansen

Sam Besse

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The F133 has articulated reels that mow ahead of the tractor wheels and follow the contour of the turf. The result? The F133 always mows a smooth path. Even on slopes.

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For More Details Circle (103) on Reply Card

ASPA *(from page 54)*

that in 1936, in the south, most lawns were swept daily because they had no grass. The only grass prevalent at the time was carpet grass which had been spread largely by cattle. The next improvement came with the introduction of centipede grass from China, which, he stated, is still a good one for the South. Then came St. Augustine or "Charleston grass" as it was generally known at the time. In 1946, a breeding program was started for bermudas with selections from golf courses and other areas. Almost 100 bermudas were evaluated in 1947. From these came Tifton 57, which eventually became Tiflawn. Next was Tifgreen 328 which is today the most popular hybrid for golf greens in the South. Tifway bermuda, another in the chain proved to have frost tolerance which made it attractive as a lawngrass. Another selection out of Tifgreen, Tifdwarf became the best and is now being used on greens. Burton listed 18 varieties of improved bermudagrasses, not one of which was available in 1936.

Bob Scagnetti, sales manager for Toro's institutional products, demonstrates gang mower.

Looking ahead, he expects exciting developments for St. Augustine research now being done in Florida. Right now, Burton said, a total of $10 million is needed to solve warm season turfgrass problems and to develop new varieties and management programs.

Dr. Funk pointed to the need for breeding disease resistance into new turf grasses. He also said wear tolerance is a factor which needs more study, especially where grasses are being used on athletic fields. With restrictions on chemical use, Funk said insect resistance is becoming a greater factor in the quest for new varieties. No one grass today, Funk stated, serves all purposes. For this reason, he believes that blends have a place in improving performance. The approach to research today in-

(continued on page 58)

Fumigation, an expensive procedure for sod producers, is in use on Cal-Turf.

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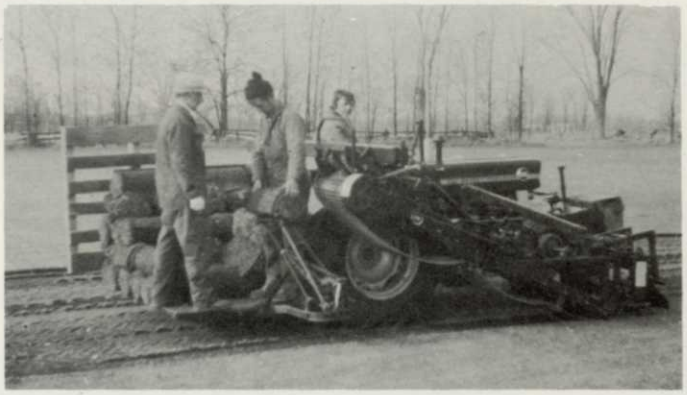

For More Details Circle (149) on Reply Card

ASPA *(from page 56)*

cludes three methods, namely, selection, mutation, and finally, hybridization, he stated.

Juchartz told growers that record-keeping and intensive management study is a must for business success. He said a grower must know operational costs and predetermine his profit. In short, he said, the successful grower today sets a profit goal and then prices accordingly. He used information adapted from Co-operative Extension Services at Massachusetts and New York in showing the effect of pricing on profits. For example, Juchartz said: To obtain the same gross income, a price increase of 3% means that only 90% of the original volume has to be sold to bring in the same gross income. With increases of 5%, only 83.5% of the original volume of sod has to be sold; with 7¼% only 77% volume; with 10% only 71%; with 15% only 65%; and with a 20% increase in price, only 58% of the original volume will produce the same gross.

This is well and good, Juchartz said, be he suggested that the group also consider the effect on gross income of a price cut. A 3% price cut requires an additional 13.6% of original volume to produce the same gross income. But a 5% price cut requires that 25% more volume be sold; 7¼% requires 43% more; 10% requires 67% more; 15% requires 150% more; and finally, a 20% price cut requires that an additional

(continued on page 64)

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Jacobsen gang mower on display at ASPA field day demonstration.

Prior to field demonstrations crowd inspects equipment. Nunes sod harvester is in foreground.

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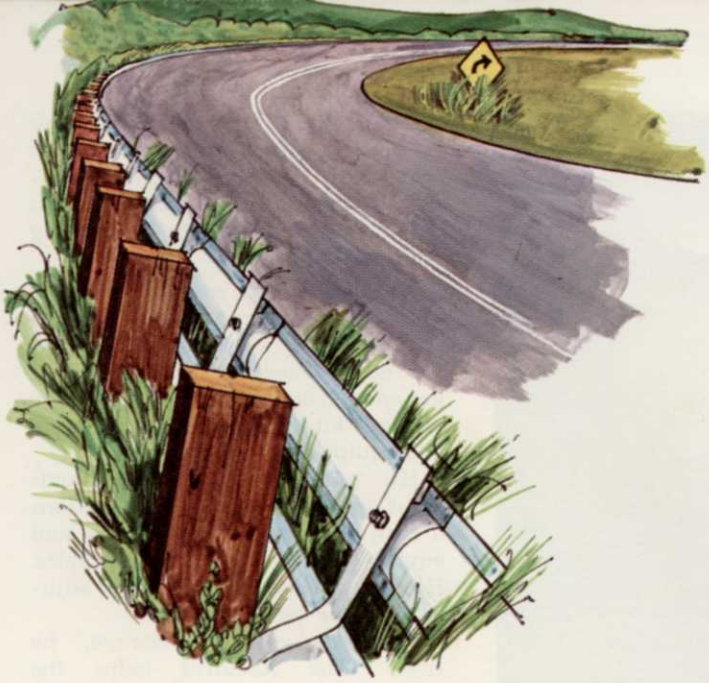

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Accutrol droplets remain visible on the leaf surface from 5 to 30 minutes so that the applicator can easily monitor the application.

ACCUTROL *(from page 53)*

50 feet is as far as you can pump.

"In our work we often have to spray from one street intersection to half a block, then move around to the next cross street and work back. Sometimes we pull as much as 500 feet of hose," he says." "The extra throw is a big help."

Cloud sprays primarily for blood weeds, Johnsongrass and willows. "We try to remove the weeds and grasses and end up with a bermuda turf. We are a public agency, working primarily in a metropolitan area. If the wind is blowing much over 10 mph, we shut down, even with the foam," he notes. The drift control features of Accutrol help but don't necessarily change a spraying operation much.

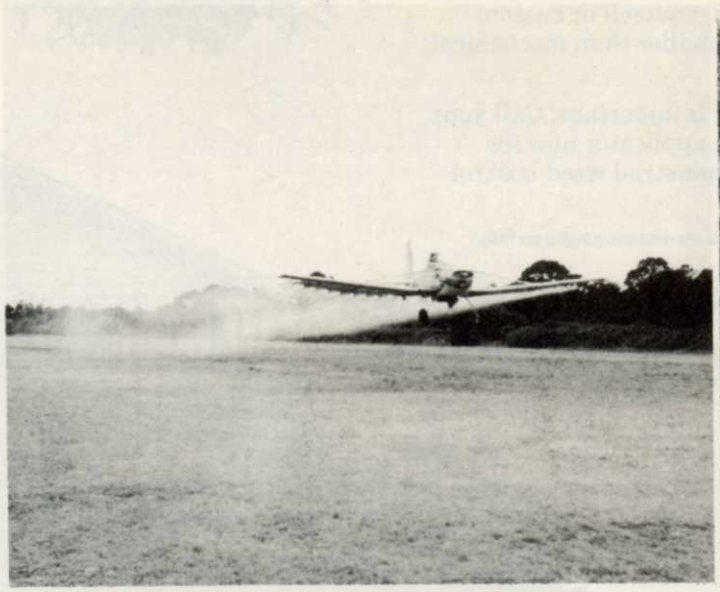
Monroe Otto, a Texas ranch owner near Needville, has brush as tall as 12 feet. Basal spraying in the past has not worked because "you don't get enough on the root system. Lately we have hit upon the right spray mix and equipment," he says.

His pull-type spray rig stands eight or nine feet tall. Otto positions a man on each side of the rig and equips them with Accutrol nozzles. He mixes Banvel and Accutrol adjuvant in the tank.

"Now we get the coverage," he says. "The Accutrol helps the chemical to penetrate better. We have close to 100 percent control."

Velsicol says the Accutrol nozzles can be used in aerial spraying as well. The exterior geometry of an aerial nozzle is different than those used with ground equipment. This is to compensate for drift control and coverage requirements. The Aerial Fine nozzle produces droplets that are small and close together for the most complete coverage. Maximum drift control can be achieved with coarse droplets from the Aerial Medium nozzles combine coverage and drift control ideal for many spraying applications.

The interest in Accutrol system is sufficient to warrant much use this year by the Green Industry. Velsicol believes that the system brings a new dimension to precision spraying, and possibly economies not yet experienced by spray applicators.



Three types of Accutrol aerial nozzles are available: Aerial Fine, Aerial Medium and Aerial Coarse.

John Leighton, Eastern Maine Electric, Calais, Me., inspects a utility rights-of-way sprayed with Accutrol.

meeting dates

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Arizona Turfgrass Conference, Stardust Motor Hotel, Yuma, Ariz., April 5-6.

Williamsburg Garden Symposium, Colonial Williamsburg Gardens, Va., Apr. 9-15.

Southeastern Turfgrass Conference, Coastal Plain Experiment Station, Tifton, Ga., April 10-12.

Canadian Chapter of the International Shade Tree Conference, Holiday Inn, Hamilton, Ont., Canada, Apr. 14-15.

National Golf Foundation, Inc., annual meeting, La Coquille Club, Palm Beach, Fla., Apr. 24.

Florida Floriculture Short Course and Open House, 18th industry short course, Bradenton, Fla., April 25-27.

Sub-Tropical Turfgrass Trade Show, Deauville Hotel, Miami Beach, Fla., May 7-10.

Florida Nurserymen & Growers Association, Walt Disneyworld, Orlando, Fla., May 25-27.

International Vehicle and Highway Safety Conference, in conjunction with the **United States International Transportation Exposition (TRANSPO 72),** Sheraton Park Hotel, Washington, D.C., May 30-June 2.

Watersheds in Transition, a national symposium, Colorado State University, Ft. Collins, Colo., June 19-21.

National Golf Foundation Western Seminar, Sunriver Lodge, Sunriver, Oregon, June 26-30.

American Association of Nurserymen, Statler Hilton, Washington, D.C., July 16-19.

National Golf Foundation Eastern Seminar, Pine Needles Country Club, Southern Pines, N.C., Aug. 7-11.

American Association of Nurserymen Management Seminar, Syracuse University campus, Aug. 13-18.

Canadian Parks/Recreation Association, 1972 conference, Ottawa-Chateau Laurier Hotel, Aug. 14-17.

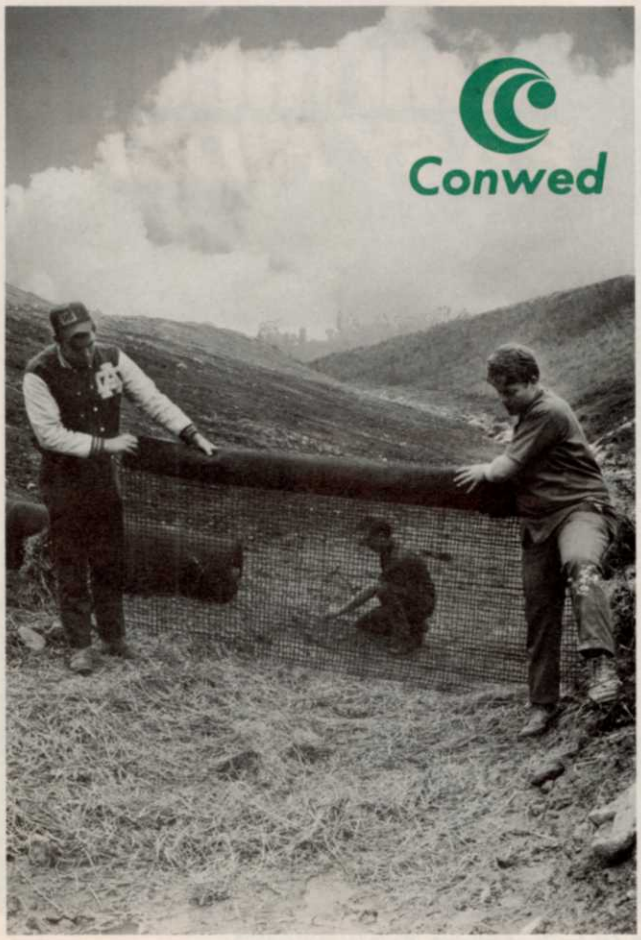
Eastern Kentucky Turfgrass Field Day and Conference, Powell Building, Eastern Kentucky University, Richmond, Ky., Oct. 10-11.

Turfgrass Equipment and Materials Educational Exposition, 12th annual, Southern California Turfgrass Council, Brookside Park, Pasadena, Calif., Oct. 11-12.

Golf Course Superintendents Association of America, 44th annual International Turfgrass Conference and Show, Boston, Mass., Jan. 7-12.

California Weed Conference, 25th annual, Disneyland Hotel, Anaheim, Calif., Jan. 15-17.

Southern Weed Science Society, 26th annual meeting, Jung Hotel, New Orleans, La., Jan. 16-18.



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insect report

INSECTS OF ORNAMENTALS

AN ADELGID
(Adelges tsugae)

VIRGINA: Adults collected on hemlock at Rocky Mount, Franklin County on March 2. This is a new county record. Also, adults and eggs taken from hemlock in Northumberland County for a new county record.

BAGWORM
(Thyridopteryx ephemeraeformis)

ALABAMA: Eggs over-wintering in bags on shrubs in 3 sites in Lee County in excellent condition. Surveys show 99 to 100 percent survival.

BROWN GARDEN SNAIL
(Helix aspersa)

OREGON: Single live specimen found in survey of 10 greenhouses and garden centers in Multnomah, Washington, Clackamas County.

A PHYTOSEIID MITE
(Ricoseius lococheles)

FLORIDA: Nymphs and adults collected on seagrape, *Coccoloba unifera*, at nursery in Miami, Dade County, January 18, 1972. This is a new U.S. record. Previous records from Brazil and Puerto Rico.

TREE INSECTS

ELM LEAF BEETLE
(Pyrrhalta luteola)

NEVADA: Numerous adults emerged from hibernation in Reno and Sparks area of Washoe County.

MOUNTAIN PINE BEETLE
(Dendroctonus ponderosae)

CALIFORNIA: Causing damage to lodgepole pine in Silver Lake, El Dorado National Forest. Many old trees dead. Silvicultural control encouraged.

SPRING CANKERWORM
(Paleacrita vernata)

KANSAS: Expected to be serious on elms in eastern areas in 1972. During late February males noted in Shawnee and Riley Counties, and 2 gravid females noted in Riley County. Indiana: Moths observed in wooded areas in Owen, Putnam, and Montgomery Counties.

TENT CATERPILLARS
(Malacosoma spp.)

OKLAHOMA: *M. americanum* (eastern tent caterpillar) hatched on wild plum in southeast and south-central areas. Larvae about 0.50 inch long in Choctaw and Bryan Counties and about 0.25 inch long in Marshall and Johnston Counties. FLORIDA: Larvae oppearing at Gainesville, Alachua County, on wild plum. ARIZONA: *Malacosoma* spp. tents noted in several areas in Salt River Valley cottonwoods in Maricopa County.

NANTUCKET PINE TIP MOTH
(Rhyacionia frustrana)

ARKANSAS: Pine twigs examined for overwintering forms indicated moth emergence will be sufficient for heavy first generation in southern area.

EUROPEAN ELM SCALE
(Gossyparia spuria)

ARIZONA: Crawler stage noted on elm trees at Prescott, Yavapai County.

DUTCH ELM *(from page 13)*

ability to solublize benomyl and finding a method of injection application, the problem becomes less complex.

WEEDS TREES and TURF asked Dr. Winand K. Hock, plant pathologist at the Shade Tree and Ornamental Plants Laboratory if this breakthrough means the end to the Dutch Elm Disease plague.

"We're still too premature to make a recommendation. We don't have all the data yet," he said. "I believe we are on the right track as far as benomyl is concerned. Certainly the material has the ability to prevent Dutch Elm Disease if we can get the fungicide into the vascular system of the tree.

"The use of benomyl and other systemic fungicides have increased the prospects of DED control. However, as with any new material there will be problems and benomyl is no exception. I believe our biggest problem is the development of a suitable and economical application technique. We must also take into account the possibility of adverse effects on the tree by the chemical," he said.

Dr. Hock's conservativism on this breakthrough is not to discredit the scientific work already accomplished. Rather, it shows that scientific success is still "in the embryonic stage." While the technique that has been developed holds promise, much testing both in the laboratory and in the field still remains.

Some of the initial studies of pressure injection were accomplished by Canadian scientists. Their data, along with information collected by the Shade Tree and Ornamental Plants Laboratory, has been carefully analyzed and forms the basis for Secretary Butz's announcement.

Plans for this year call for testing a number of application techniques in diseased trees in cities across the country. Some of these methods include Medicaps "cartridges manufactured by Creative Sales, Inc. of Fremont, Neb. and the Mauget Injector sold by CLM National, Sedalia, Mo. When this data is thoroughly analyzed, plant pathologists such as Dr. Hock and others will be better able to recommend proper application techniques.

The concern to save the American elm from destruction has been foremost in the mind of John P. Hansel, executive director of the Elm Research Institute, a non-profit organization located in Waldwick, N. J. Hansel has explored virtually every avenue in the Elm Research Institute's crusade to save the American elm. Through donations by individuals, organizations and municipalities the Institute has made grants to many major universities to conduct research on the ultimate control of the disease.

"We've been thinking monetarily when we should have been thinking sentimentally," Hansel told WEEDS TREES and TURF when asked about saving American elms. "What we have achieved in the past few months is just one more good step—not a breakthrough. The breakthrough comes when the private owner opens his pocket."

Hansel recognizes that the dark gloom that has shrouded elms for many years is now changing to dawn. "This is the first daylight," he says. "There's more work to be done. Spraying in the past has been hampered. People lacked the appreciation of the value of the elm and the cost of care. Too few arborists were confident enough to be elm experts.

"Then along comes Benlate (benomyl). Now we have a foolproof chemical." There's other steps that must be accomplished, however. "I think we've made the tools **more** foolproof," adds this crusader.

Hansel's concept of tools is detailed in what he calls "Specialized Elm Care." It includes prevention and therapy and as he points out "represents the collective experience of leading arborists, combined with the latest developments in the control of this dread disease."

Prevention or how to protect a healthy tree includes such items as dormant sprays, leaf sprays, feeding and pruning.

Scientists and others have known for some time that DED is often spread by the smaller European Elm Bark Beetle which feeds on healthy elms. As adult bark beetles leave diseased elm trees, fungus spores of DED (Ceratocystis ulmi) are likely to cling to their bodies. These spores enter healthy trees through the feeding wounds made by the beetles.

Insecticides, namely chlorinated hydrocarbons, have been used to combat the problem. However, while they were effective in controlling the beetle, residues were found to be harmful to other wildlife. Within the past three to four years scientists at universities and the U.S. Forest Service have been testing methoxychlor for beetle control. Although this compound is still a chlorinated hydrocarbon, its action

(continued on page 66)

The great dwarf Bluegrass that stands below the rest.

NUGGET BLUEGRASS
Nugget Kentucky Bluegrass was discovered in Alaska near the old mining town of Hope on Cook Inlet.

In tests by leading turf research workers, characteristics of Nugget have proven to be outstanding, with exceptionally uniform performance over a broad area.

DWARF CHARACTERISTICS
Nugget is a decumbent, dwarf type cultivar of Kentucky Bluegrass. Its leaves grow close to the ground and at cuts as low as 3/4 inch Nugget still displays excellent turf quality in both appearance and strength. Nugget has exceptionally uniform regrowth, remaining neat and even if left uncut for longer than usual lengths of time.

SHADE ADAPTABILITY
Nugget's tolerance to powdery mildew contributes to its superior performance in shade as compared to other bluegrass varieties.

DISEASE RESISTANCE
In broad tests, Nugget has consistently ranked outstanding in resistance to Helminthosporium Leafspot. Nugget also shows good tolerance to Stripe Smut. It has also shown resistance to leaf rust, powdery mildew, and snow mold.

APPEARANCE AND COLOR
Along with its uniform growth, Nugget's appearance is enhanced by its fine leaf texture and unusually deep, dark green color.

SEED QUALITY
Only Certified Blue Tag Nugget Kentucky Bluegrass, free of poa annua and bentgrass, is marketed. Only Certified Nugget is a direct progeny of the Alaska-grown seed.

Nugget . . . The Kentucky Bluegrass that survived Alaska. Try it where you live.

Write today for more information on Nugget, the dwarf grass that stands below the rest.

Name _____

Address _____ Zip _____

City _____ State _____

Nugget

Box 217, Albany, Ore. 97321

For More Details Circle (110) on Reply Card

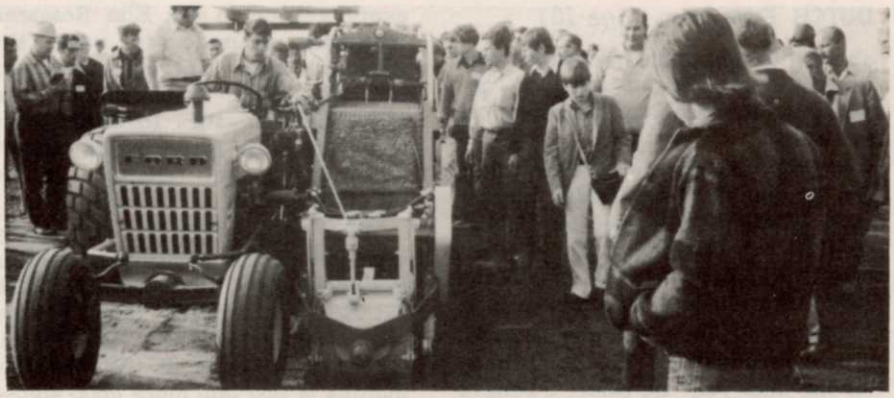
ASPA *(from page 58)*

400% volume of sod be sold to gain the same gross income.

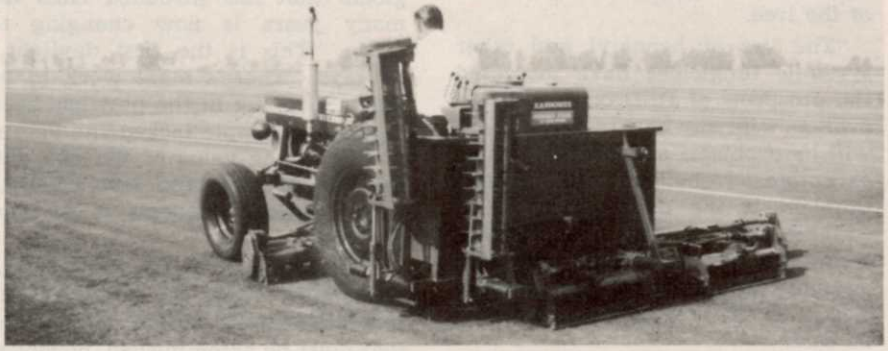
Besides an intensive educational program, growers toured University of California research plots and one ranch of host Tobias Grether. Tours included a look at test plots of U. S. Borax, Elanco, Tuco Upjohn and others. A major exhibit and field day was also held on the Grether ranch where in addition to late models of more or less standard equipment, several new items were introducd. Toro displayed a hydro-mulcher, Grether demonstrated his custom-built, 12-foot flail mower for clipping sod, John Nunes demonstrated his new model harvester which includes a sod cutter and sod folding mechanism, and Ransomme demonstrated a new sod slitter attachment for their mower.

Headquarters for the session was Disneyland Hotel, adjacent to Disneyland, and this attraction proved worthy in that more families accompanied growers than at any previous meeting.

Next major event will be a summer meeting hosted by the Ontario, Canada, Nursery Sod Growers July 10-12.



New sod harvester model manufactured by John Nunes features sod cutter.



Raised gangs on the new slitter units demonstrated by Ransomme.

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Over 800 INTERCHANGEABLE SPRAY TIP TYPES AND CAPACITIES... tapered edge, even and wide angle flat spray . . . hollow and full cone . . . disc type hollow and full cone . . . and flow regulators. The most complete line for spraying herbicides, insecticides, fungicides and liquid fertilizers. All materials . . . brass, aluminum, stainless steel and Nylon. Dependable delivery. For complete information on spray nozzles, spray guns and accessories write for Catalog 35.

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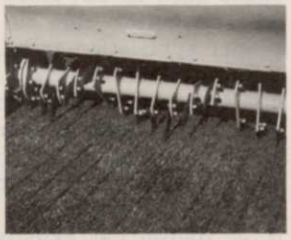
IT DOES MUCH MORE...IT PROVIDES **TOTAL** TURF AERIFICATION ... In a single pass, the new Howard TURF-QUAKER will completely relieve compaction, remove excess thatch, and open the soil for water and nutrients. It uses a unique auger-like blade pattern that slices into compacted turf, rapidly moving it from side to side with a firm shaking action that loosens it down to the roots. The turf is left completely open to all the water and nutrients it needs.

TURF-QUAKERS are available in tractor-mounted and hand operated models. For complete information write: HOWARD ROTAVATOR CO., INC.
Dept. 366, Harvard, Illinois 60033
A Member of the Rotary Hoes Group of Companies



HOWARD ROTAVATOR

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Aquatic Weed Group To Meet July 9-12

Technical papers on aquatic weed control are being called for by Robert J. Gates, president of the Hyacinth Control Society, a national organization dedicated to control of all noxious aquatic weeds.

The annual meeting is scheduled July 9-12, 1972, at Miami, Fla. Gates has announced that headquarters will be at the Miami Springs Villas —Kings Inn, Miami. Reservations can be made directly with the hotel and convention rates are $14.50, either double or single.

Program plans are tentative and will shortly be announced. Normally, 100 or more technical papers are presented by industry leaders and researchers in aquatic weed control. In addition, the Society normally sponsors a field day demonstration program. A special program for wives and children is likewise scheduled, and Gates reports plans are being formulated for a number of special activities for both.

Traditionally, the Society has extended an invitation to anyone interested in aquatic weed control. Besides members, attendance includes non-members from many states and usually several foreign representatives.

Details are available from Gates at Box 508, Floral City, Fla. 32636.

Scientists Seek Biological Control of Forest Pests

A new project aimed at biological control of forest insects is getting under way at the University of California, Riverside.

The project represents the first major effort to investigate "natural" methods of insect control, as opposed to conventional chemical methods, in southern California watersheds, according to entomologist E. F. Legner, who heads a five-man research team.

Biological controls are needed for two reasons, he said:

"There are increasing objections to the use of chemicals in forest, wildland, and watershed areas; and the control of pests with chemicals is extremely costly, as well as temporary in effect.

"Despite the importance of forest lands in California, there has been little effort to date toward biological control of insect pests by the importation of their natural enemies."

Specific objectives of the new project will be: to find and test natural enemies of needle miners, the California oakworm, the California flatheaded borer, the pinyon pine sawfly pine scale, and a recently invading pine tip moth.

Parasites, predators, and pathogens (disease-causing agents) that attack pest insects will be found and studied carefully to make sure they are effective and safe—that is, unable to become pests themselves.

Dr. Legner said the first step will be to survey Southland forests to learn what natural enemies of pest insects already exist and how effective they are.

Second step will be to explore areas such as the forests of North America to find natural enemies in areas where some of California's pest insects are believed to have originated.

Third step will be to make periodic mass releases of beneficial organisms. This will be done cooperatively with U.S. and California forestry agencies.

Each release will be evaluated with the aid of computers, Dr. Legner said.

"EVER-GREEN" TURF IRRIGATION VALVE BOX COVERS...

...other advantages are more obvious!

Golf courses, estates, parks, cemeteries, private clubs, landscaped lawns—why put up with ugly concrete or rusty cast iron turf irrigation valve box covers? Now you can have green covers that blend beautifully with the turf. And they're made of tough SUPERFLEXON® thermoplastic that lasts and lasts. Thermoplastic valve and meter boxes are resistant to moisture, and unaffected by temperature changes. They're also less brittle than concrete or cast iron . . . and much lighter, easier to install and to store. And they cost less! Thousands are in use from coast-to-coast—Philadelphia, Pa. to Sunnyvale, California.

Thermoplastic turf irrigation valve boxes with "ever-green" covers offer a new dimension in appearance as well as utility.

For complete details, write: AMETEK, INC., Plymouth Plastics Division, 502 Indiana Avenue, Sheboygan, Wisconsin 53801.

Meter Pits (round) and Meter Boxes (rectangular) can be supplied with "ever-green" cover.

Also available: Durable, easy-to-install AUTOSTOP®, less costly than concrete curbs. Weather and crumble proof. Never needs painting; impregnated yellow, green, forest brown or white. Write for facts.

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DUTCH ELM *(from page 63)*

on wildlife is considerably less severe than other members of this chemical family.

Hansel's prevention program calls for a dormant spray of two percent concentration of methoxychlor prior to leaf emergence. This would be followed with a leaf spray of methoxychlor and Benlate benomyl fungicide applied as a foliar spray one week after leaves reach full size. He believes that "should the fungus be introduced by bark beetle feeding, the absorption of the fungicide through the leaves and young bark will help prevent growth of the fungus and restrict its spread into the system of the tree."

As another part of the prevention program, Hansel recommends feeding the elm tree to maintain a healthy state and pruning as needed, but not during the period when beetles are active.

Treating a diseased tree is what Hansel terms therapy. The first step involves surveillance — a visual sighting of the tree daily during June, July and August for signs of wilt or leaf chlorosis. Injecting a fungicide into the tree's vascular system comprises step two. Pruning of limbs that show flagging (wilt) follows next. Lastly, laboratory identification of DED should be accomplished.

Hansel's record of success looks good. Over a 13 year period, one elm specialist who practiced "Specialized Elm Care" averaged less than 1 tree in 100 lost to DED.

What does "Specialized Elm Care" cost? Hansel says it varies from community to community, but costs range from $50 to $100 per year for an average 2-foot diameter elm. Contrast this to as much as $400 to $500 to remove a diseased elm in some cities and the cost of "Care" is quickly justified. "This cost is no more than a 'service contract' charge for many appliances with a life expectancy of only 10 to 15 years," notes Hansel.

What other avenues are available in Dutch Elm Disease control?

Plant breeders continue their search in hybridizing the American elm with a more disease-resistant elm species. Their goal is an elm that retains the beauty of the American elm yet exhibits resistance to DED.

Scientists have also discovered that some American elms appear to be naturally resistant to DED. Why? No one knows at this time, but researchers are working on this mystery.

Another glimmer of hope lies in the introduction of a non-stinging wasp, *Dendrosoter Protuberans*, imported from Europe to act as a parasite of the smaller European Elm Bark Beetle. The wasp would lay eggs in the larvae of the beetle. When the eggs hatch, the larvae of the wasp feed on the beetle larvae and kill them. If the wasp spreads throughout the country, it eventually could be an important factor in stopping the spread of DED.

Dr. James Butcher, Michigan State University entomologist says, "As yet we don't know the extent of

This small, non-stinging wasp pushes through elm bark to lay its eggs in the larvae of the elm bark beetle. The wasp larvae become parasites of the beetle larvae, eventually killing them.

its spread, how high its populations are or the significance it will have in the future. We are working closely with the U. S. Forest Service to determine the significance of these developments.

The work that the Shade Tree and Ornamental Plants Laboratory, the Elm Research Institute, the U.S. Forest Service and others has stirred the fire of hope into a raging inferno. Interest is at an all time high and individuals, organizations and municipalities are anxious to try the new discoveries and techniques that scientists have developed.

Optimistically, John Hansel sums it up this way."I believe we are going to save many thousands of trees this year."

classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: "Position Wanted" 10¢ per word, minimum $3.00. All other classifications 20¢ per word, minimum $4.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Boldface rule box: $25.00 per column inch.

HELP WANTED

FORESTER: A well-established Midwestern tree service company is seeking a graduate forester interested in availing himself of an opportunity to become a part of management and participate in the continued growth of the company. The responsibilities of such a person would include, but not necessarily be limited to, tree and lawn service to private property owners, consulting, research, and other types of related services. The program is presently established but someone is needed with the initiative and capability of expanding into greater areas. Several years experience in any of the above phases of service is desirable but not necessarily required. We offer an attractive salary with the possibilities of a bonus together with the usual fringes including an excellent health, accident, and life insurance group plan. Please address your inquiry to Box 79, Weeds Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

WANTED

District Manager for growth area in Florida. Duties include supervising all aspects (training, sales, production, quality control, administration, creating additional branches, etc.) of our established turf and ornamental spraying business in his district. The branch managers in his district would be directly responsible to him for operation of their branches. This is an excellent opportunity for a man with training in horitculture or related fields, and with a moderate to heavy business background. A successfully proven training program is available. We are a growth company with ambitious but realistic goals presently grossing over $1,000,000 annually. Generous compensation and benefits for qualified man. Send resume to:

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"Well, there's a sure sign of a dead branch."

TREE SERVICE salesmen: An opportunity to grow with a rapidly-expanding company with a strong position in the industry. We're looking for aggressive men who can sell tree work and manage their own segment of the business. Salary and profit-sharing plan, company car, pension plan, paid hospitalization, etc. Call or write, Ken Knox, Vice President, Monroe Tree Service, Inc., 225 Ballantyne Road, Rochester, New York, 14623. Phone 716 436-2900.

ONE OF New York State's largest turf nurseries seeks a man, educated or experienced in turf farming. A general knowledge of sales, management and agriculture equipment necessary. A bright future with a growing company. Excellent salary, hospitalization and other benefits. Apply giving complete resume of past experience and references to Mr. A. L. Peca, Batavia, New York 14020.

POSITIONS WANTED

HORTICULTURIST SEEKS managerial or sales position. Write Box 84, Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

USED EQUIPMENT

AGR-RAIN water winch with 660 ft. of 4" hose and powered hose reel, 4 years old, used very little. Unsuitable for our condition, but ideal for level fields. Irrigates 20 acres per day. 1 man moves and resets in less than 1 hour. Green Valley Turf Farms, Inc., P.O. Box 163, Canfield, Ohio 44406. Phone: 216 533-3354.

WE WILL BUY your aerial towers, stump grinders, chippers. For Sale: Skyworkers (2) mounted on 1970 Ford and 1970 Chevy. Under 10,000 miles. Three 12" and 16" Asplundh Chippers 2 years old. Edwards Tree Service, 3190 Cooper Foster Park Rd., Vermilion, Ohio 44089. Call 967-6750 or 933-6750.

RECONDITIONED brush chippers, sprayers, log splitters, stump routers, bucket trucks. Let us know your needs. Equipment Sales Company, 5620 Old Sunrise Highway, Massapequa, New York 11758. Phone 516 799-7619.

FOR SALE: IHC Twin Screw tractor, $2200.00. Tandem flatbed semi-trailers, $400 and up. 7 Gang Roseman mowers, sharpened, $1,000.00. 13 gang sharpened, $2200.00. Phone 414 484-3941.

RYAN SOD cutter CDV-18 with cut off. Very good condition. Used on 15-acre sod farm. $850.00. Rayburn Pigg, 11323 Cline Ave., Crown Point, Indiana 46307. Phone: 219 663-2879.

A-1 CONDITION John Bean skid mounted, 300 gallon capacity, 25 g.p.m. pump with 25 h.p. Wisconsin engine. Contact Liqui-Green, Inc., 9425 Pioneer Parkway, Peoria, Illinois 61614. Phone 309 243-5211.

BEAN ROTOMIST Model 301-T trailer-mount with electric brakes, excellent condition. Write Box 83, Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

MISCELLANEOUS

TREE APPRAISALS AND SURVEYS: For names of members of American Society of Consulting Arborists, Inc., nearest you, contact: Executive Director, ASCA, 12 Lakeview Avenue, Milltown, N.J. 08850.

WATERWELL feasibility studies by instrument. For full particulars contact Accurate Water Location, Box 947, Poughkeepsie, N.Y. 12603 or call 914 462-0560.

LANDSCAPE DESIGN KIT, 37 rubber symbol stamps and ink pad. Postpaid $25.00. C.O.D. $26.00 plus postage. Order direct or brochure sent. California add tax. T-Gordon's, Box 741T, Reseda, Calif. 91335.

MISCELLANEOUS WANTED

WANTED—Commercial well leads. Commissions paid on signed contracts. See article 3/69 "Locate Water Supply." Free particulars. Accurate, Box 947, Poughkeepsie, New York 12603.

FOR SALE

DOUBLE EDGE sod cutter blades. Will fit any Ryan sod cutter. Works like double edge razor blade. Cuts much more sod per blade. Made to bolt on both ways. $24.00 plus postage. New automatic sod loaders for direct loading to pallets, trucks or trailers. No workers needed on ground. Both products developed and designed by Hadfield. Write or call Glen Hadfield, 4643 Sherwood, Oxford, Michigan 48051. Phone 313 628-2000.

PROFITABLE TREE — Spray & Landscape Service. Modern plant and equipment. Good management and sales force. Signed orders for '72 booked to capacity. Owners would like to retire but will stay with operation during transition. Write Box 82, Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

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SOD QUALITY MERION SEED for discriminating growers. Also Fylking, Delta, Park, Newport, Nugget and Pennstar bluegrasses as well as fine fescues. We will custom mix to your specifications. Michigan State Seed Company, Grand Ledge, Michigan 48837.

CROWNVETCH SEED Penngift and Chemung varieties in good supply. Direct all inquiries to: Walter C. Mehlenbacher, Castile, New York 14427. Phone 716 493-2553.

REAL ESTATE

FARMS FOR SALE—78 acre northern Indiana muck sod farm with modern residence and outbuildings. Complete with all equipment. Established business. 140 acres growing sod with lease. Favorable contract sale. Schrader Real Estate, Inc., 209 W. VanBuren, Columbia City, Indiana 46725. Phone 219 244-7606.

EDUCATION-BOOKS

LEARN AUTOMATIC IRRIGATION. Easy to follow text and diagrams on latest valves, heads, controllers. System design, operation and trouble shooting. Write for free outline on this ten lesson low cost course. Larson Company, P.O. Box 4453, Santa Barbara, Calif. 93103.

trimmings

NATURAL TURF MAINTENANCE costs are less than artificial turf, according to Melvin J. Robey, superintendent of Purdue's athletic facilities. For Ross-Ade Stadium, the university's football field, he said resodding cost $2,600 including labor and materials. Artificial turf manufacturers claim the same area would cost from $25,000 to $30,000.

Cost of maintenance and resodding for a year was $4,475, with artificial turf producers claiming a cost almost five times as much. Yearly maintenance of an artificial turf football field would amount to $5,000 according to its manufacturers, Robey said.

* * *

TALL FESCUE AND KENTUCKY bluegrass have cut growing time for sod in Harford county, Maryland, from the normal two to two-and-a-half years down to 18-20 months. Producers were using creeping fescue and Kentucky bluegrass, but shorter time to harvest plus a slight price advantage has convinced growers to switch. One producer increased his experimental three acres to 50. Two other sod producers have seeded 110 acres.

* * *

A CONTROLED CHECK by Federal inspectors of commercial interstate trucks and busses in highway use has shown that 17 percent of the vehicles were in unsafe operating condition. They were ordered out of service until the mechanical deficiencies were corrected. Percentage of vehicles ordered out of service as a result of safety checks during random inspection activity was 24 percent.

* * *

PUTTING GREEN SOIL should have a percolation rate of about five inches per hour. The same soil should have a total pore space of about 35 percent by volume. Capillary pore space should account for about 25 percent of this. The rest should be non-capillary pore space. University of Florida research has demonstrated that adding colloidal phosphate, vermiculite and/or peat to sand in the proper proportions can result in a mixture with those desired physical properties.

FOUR MILLION private individuals own almost 303 million acres of forests, or nearly 66 percent of America's forested land.

* * *

JAMES CIPRA of Burr Ridge, Ill. takes his job home with him at night. A tree trimmer by trade, he whittles and carves things out of wood in his spare time. Owner of Riverside Tree Service, Cipra started whittling about two years ago. He turns out everything from toothpicks to totem poles.

* * *

PULLING WEEDS WON'T HELP says South Dakota State University. Their research shows that the root system of a single plant of field bindweed will penetrate the soil to a depth of 4 feet in one season and spread 2½ feet laterally. After three growing seasons the roots have extended downward 18 to 20 feet and covered a circle 17 to 18 feet in diameter.

* * *

Prentiss Drug & Chemical Co., Inc., is relocating its Chicago branch office to new and larger quarters at 15 S. Prospect Avenue, P.O. Box 701, Park Ridge (Chicago), Ill. 60068. The firm is a producer of insecticides, rodenticides, chemicals and drugs.

Sodding Specifications Developed by ASPA

Guideline specifications for sodding have been developed by the American Sod Producers Association.

Purpose is to provide architects, owners, builders, developers and others with information to guide their efforts in using sod. Many plans today merely list "this area to be sodded." The Association has long believed that some specific guidelines would be helpful for the industry.

Information in the new publication includes that on soil preparation, sodding and turfgrass management with details on practically every area of management.

Major sections include specifications on subsoil preparation, topsoil material and application, fertilizer and pH corrections materials and final soil preparation, specifications for sod materials and transplanting, and for maintenance of transplanted sod.

Dr. Henry Indyk, executive-secretary of the ASPA, has announced that single copies are available via his office on request, at P. O. Box 231, New Brunswick, N. J. 08903.

The Grounds For Grass

Presented as part of a paper, "Grass and The Tamed Landscape" by Walter Bruning, A.S.L.A., landscape architect consultant for Jacobsen Manufacturing Company.

1. **Grass Freshens the Air** — Like the leaves of trees, grass — through the process of photosynthesis — absorbs the pollutant carbon dioxide and gives off the oxygen atom.
2. **Grass Filters Out Dust and Dirt**—Dust particles (from leaves of trees) either drop or are washed from the leaves to the grass below. The grass blades trap the particles and eventually are absorbed into the soil.
3. **Grass Controls Erosion** — A healthy stand of grass prevents wind erosion, water erosion and retains precious water.
4. **Grass Reduces Glare** — Just picture yourself at mid-day driving a four-lane ribbon of concrete in mid-July as opposed to resting your eyes on the green of Central Park.
5. **Grass Reduces Radiation** — Of the total amount of solar heat striking the surface of a lawn, 5 percent is reflected, 5 percent is absorbed and 50 percent is eliminated through the transpiration or cooling process.
6. **Grass Helps Deaden Sound** — The Riverbank Acoustical Laboratory of the ITT Research in Geneva, Ill., compared the acoustical qualities of turf with a heavy carpet on a felt pad. Surprisingly, the grass proved to have superior sound absorption qualities in the low and high frequencies which are the most annoying to man's ears.
7. **Grass is Eessential to Wildlife** — Grass is a source of food to many forms of wildlife and provides a haven for song birds, game birds and small animals.

PRUNUS serrulata "Amanogawa"

MALUS "Hopa"

CARPINUS betulus "Fastigiata"

ACER platanoides "Emerald Queen"

PRUNUS serrulata "Akebono"

Davey gives you a colorful choice.

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You'll find the specific trees you need for the coming season in the Davey Tree Nursery near Wooster, Ohio. Not only the proved old reliables, but many hard-to-find specimens, too.

Right now, the Davey Tree Nursery has a substantial supply of more than 150 varieties of shade and ornamental trees, many of them patented and registered. We have good-sized blocks of matched shade trees with four- and five-inch trunks and full crowns, and tens of thousands of smaller trees. And we'll transport our trees any distance.

The next time you need trees—to frame a new mall, accent a shopping center, line a boulevard, or for any other spot — think first of Davey. For quality trees in the quantities you need.

You should know more about the Davey Tree Nursery. Why not stop in the next time you're near Wooster, and look around? If you can't make it in person, call 216-264-3533 for up-to-date prices and availabilities. Or send the coupon for our tree catalog.

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Coast to Coast and Canada

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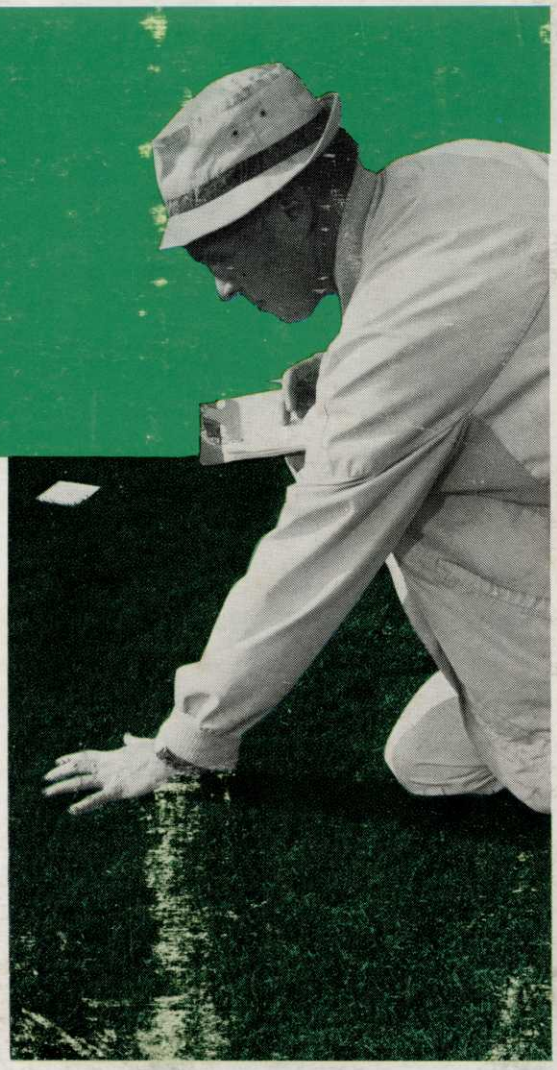
baron KENTUCKY BLUEGRASS



Today, when knowledgeable agronomists talk about The Greening of America, they're talking about Baron Kentucky Bluegrass—discovered in Holland by the renowned plant breeder and seedsman, Barenbrug of Arnhem, The Netherlands, and now grown in America exclusively by Lofts Pedigreed Seed, Inc.

Baron Bluegrass germinates rapidly, grows slowly, and is adapted to mowing as low as ¾″ . . . making it ideal for golf courses, fine lawns, and industrial properties. Its broad blades interlock to make a crisp surface ideal for holding a golf ball on the fairway.

Baron Bluegrass is extremely winter hardy, maintains a fine winter color, and is highly disease resistant.

All Baron seed is CERTIFIED BLUE TAG, poa annua and bentgrass free.

A patent has been issued by the U.S. Federal Government for Baron Kentucky Bluegrass.

Other varieties of grasses currently available from Lofts include Jamestown Red Fescue, Exeter Colonial Bentgrass and Kingstown Velvet Bent.

GOLF COURSE BUILDERS OF AMERICA
MEMBER

Dr. Kenyon T. Payne, Professor of Crop and Soil Sciences at Michigan State University, states: "Baron has been an outstanding variety. It maintains excellent dark green color throughout the season. During an exceptionally severe **Helminthosporium** leafspot infestation in 1970, it ranked second in seasonal appearance of all named bluegrass varieties which are commercially available, and first in this group in resistance to **Typhula** snowmold. It appears to be highly promising for the sod and turf industry." Dr. Payne heads the M.S.U. Turfgrass Breeding Research projects and is currently working on fine-leaf fescue breeding and seed production programs for Wintergreen Chewings Fescue and a new winter-hardy Meadow Fescue.

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